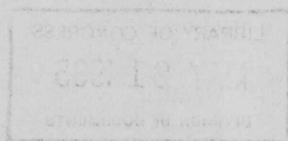


73<sup>D</sup> CONGRESS : : : 2<sup>D</sup> SESSION

JANUARY 3—JUNE 18, 1934

886

# HOUSE DOCUMENTS



VOL. 35



UNITED STATES  
GOVERNMENT PRINTING OFFICE  
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73D CONGRESS : : : 2D SESSION

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ANNUAL REPORT  
OF THE  
SURGEON GENERAL *of the*  
PUBLIC HEALTH SERVICE  
*of the* UNITED STATES

FOR THE FISCAL YEAR

1933



UNITED STATES  
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ANNUAL REPORT

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SURGEON GENERAL OF THE  
PUBLIC HEALTH SERVICE  
OF THE UNITED STATES

FOR THE FISCAL YEAR

1933  
TREASURY DEPARTMENT

Document No. 3059

*Public Health Service*

II



UNITED STATES  
CONTINUING PRINTING OFFICE  
WASHINGTON, D. C.

LETTER OF TRANSMITTAL

TREASURY DEPARTMENT,  
OFFICE OF THE SECRETARY,  
*Washington, December 20, 1933.*

SIR: In accordance with section 9 of the act of Congress approved July 1, 1902, I have the honor to transmit herewith the report of the Surgeon General of the Public Health Service for the fiscal year 1933.

Respectfully,

H. MORGENTHAU, Jr.  
*Acting Secretary.*

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.



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# ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE

TREASURY DEPARTMENT,  
BUREAU OF THE PUBLIC HEALTH SERVICE,  
*Washington, D.C., October 15, 1933.*

SIR: In accordance with the act approved July 1, 1902, I have the honor to submit for transmission to Congress the following report of the transactions of the Public Health Service of the United States for the fiscal year ended June 30, 1933. This is the sixty-second annual report of this service, covering the one hundred and thirty-fifth year of its existence.

The several duties imposed upon the Public Health Service by law include the prevention of the introduction and spread of infectious diseases from foreign countries into the United States. This is one of the important public-health functions of the Federal Government. The relation between the spread of epidemic diseases and commercial intercourse has long been recognized. In protecting our territory from invasion by diseases from foreign countries in accordance with the requirements of law, it has been necessary to keep currently informed as to the prevalence of disease throughout the world insofar as practicable. The increasing use of international aerial transportation makes it especially necessary that current information relating to the prevalence of disease in all countries be available.

## WORLD HEALTH CONDITIONS

The available reports indicate generally good health conditions in most of the countries of the world during the calendar year 1932 as compared with preceding years.

Influenza appeared in England and Scotland in epidemic form in December 1932, appearing later in Ireland. It was reported in most of the European countries, but was most severe in the British Isles, Germany, France, Switzerland, and Spain. The disease was generally mild, and the death rates were not seriously affected except in a few countries and for short periods. In Germany data collected by the sickness funds indicated that the characteristics of the disease did not differ among the workers and the unemployed.

In 1932, about 75,000 cases of cholera were reported throughout the world, with 39,000 deaths. In 1931, 260,000 cases and 141,000 deaths were reported. Most of the recorded cases occurred in India. It is probable that many cases in portions of Asia, where vital statistics cannot be secured, were not recorded.

In the Philippine Islands 420 cases of cholera were reported during the calendar year 1932, as compared with 936 cases in 1931.

In the United States and in England smallpox was less prevalent in 1932 than it was in 1931, but in British India this disease caused 26,900 deaths in 1932 and 19,000 deaths in 1931. During the first 6 months of 1933 there was a marked increase in the prevalence of



smallpox in India. In Mexico smallpox caused about 10,000 deaths in 1931 and somewhat less than 7,000 deaths in 1932.

Plague was widespread throughout the world in 1932. Wherever commerce goes rats are carried, and some of these rats carry plague-infected fleas. Plague did not appear in the Philippines during the year, but there were 6 cases of plague with 5 deaths in the Territory of Hawaii, and plague-infected rodents were found in Hawaii and in California. In India plague caused more than 38,000 deaths in 1932—about 10,000 more than occurred in that country in 1931.

Typhus fever, another disease of widespread occurrence, is reported from all of the great divisions of the world. In Mexico typhus fever caused more than 1,000 deaths in 1932 and nearly 1,500 deaths in 1931. In the United States most of the cases of typhus fever are of the mild form, but in many countries where the disease is spread by body lice it is comparatively severe. In eastern Europe and western Asia typhus fever is endemic, but the numbers of cases and deaths have been decreasing since the World War.

Yellow fever was reported in several provinces of Brazil during the calendar year 1932 and in several countries in Africa, including French West Africa, Portuguese Guinea, the Gold Coast, and Nigeria. The numbers of cases reported were not large, but the infection exists in large areas.

#### HEALTH CONDITIONS IN THE UNITED STATES

During the calendar year 1932 and the first half of the year 1933 health conditions were good in the United States as compared with those of preceding years. The general death rate for the year 1932 was the lowest ever recorded. Infant mortality and the death rates for tuberculosis, diphtheria, and typhoid fever also reached new low records. There were no unusual widespread epidemics, and the principal increases in the death rates over rates for preceding years were for cancer, heart disease, and other so-called "degenerative diseases," the death rates of which have been increasing for years. Whatever influence distressing economic conditions may have had on the health of the people of the United States generally, unfavorable results are not yet apparent from an examination of crude death rates, the reports of cases of communicable diseases, or deaths of infants.

The general death rates in 27 States (having an aggregate population of more than 92 million) for the last 5 years are as follows:

Year	Deaths per 1,000 population
1928.....	12.0
1929.....	11.8
1930.....	11.2
1931.....	11.0
1932.....	10.8

These rates are about one tenth of 1 per 1,000 population lower than the rates for the death registration area.

The decrease in the numbers of deaths from several of the communicable diseases since the beginning of the present century is shown by the following comparison of death rates in the registration area in 1900 with death rates computed from reports to the Public Health Service for 1932: Tuberculosis death rates, 1900, 201.9 per 100,000



population; 1932, 61.3 per 100,000. Diphtheria, 1900, 43.3 per 100,000; 1932, 4.8. Typhoid fever, 1900, 35.9 per 100,000; 1932, 4.6. These figures indicate that if the death rates of 1900 had prevailed in 1932 there would have been 175,000 more deaths from tuberculosis in the United States in 1932 than actually occurred, 48,000 more deaths from diphtheria, and 40,000 more deaths from typhoid fever. The total saving of life in 1932 as compared with 1900 in these three diseases alone amounted to 263,000 lives. The increases in deaths from some diseases during the period covered are more than balanced by these and other decreases. The general death rate in 1900 was 17.5 per 1,000. If this death rate had prevailed in the United States in 1932, there would have been 800,000 more deaths in 1932 than actually occurred.

Infant mortality has been decreasing since comparable annual statistics have been collected in the United States. As recently as 1915, 1 infant of every 10 born in the registration area died before reaching its first birthday; in 1920, 1 out of each 12 died; in 1925, 1 out of 14; in 1930, 1 out of 15; in 1931, 1 out of each 16; while in 1932 only 1 out of each 17 babies died before the expiration of its first year.

The birth rate in the United States continues to decline. In 1915 there were 25.1 recorded births per 1,000 population; in 1920 the rate was 23.7 per 1,000; in 1925, 21.5; in 1930, 18.9; in 1931, 17.8; and in 1932 preliminary reports showed 17.3 births per 1,000 population. Reductions in birth rates are also being noted in many foreign countries.

In 1932, 46 States reported 10,887 cases of smallpox, as compared with 28,755 cases in 1931 and 46,560 cases in 1930. The decrease was 76.6 percent in 2 years. The reports indicate that the prevalence of smallpox in the United States was less in 1932 than it has been at any time since the Public Health Service began to collect statistics of its prevalence. The smallpox death rate for 1932 was the lowest ever recorded by the Public Health Service—4 smallpox deaths in each 10,000,000 of the population. In Mexico the smallpox death rate in 1932 was about 1,000 times the rate in the United States—4 per 10,000 population. However, even the comparatively small number of cases of smallpox in the United States caused a great amount of suffering which could have been prevented.

Late in November 1932 an increase was noted in the prevalence of influenza in some Southern and Western States. The numbers of reported cases increased rapidly and the disease spread toward the East and North, reaching a peak for the country as a whole the last week in December. The decline in prevalence was continuous, and the number of cases of influenza reported for February was below the average of the preceding 3 years, which were not epidemic years. The disease was unusually mild, and the general death rate in large cities rose for only a short time and did not reach the high point of 1931. The highest weekly death rates in these cities for the last five winters were: 1929, 20.5 per 1,000 population, in February; 1930, 14.1 per 1,000, in March; 1931, 15.1, in January; 1932, 14.7, the last week in February; and 1933, 13.6, the first week in January.

During the calendar year 1932, no case of plague occurred in the United States, but 2 plague-infected ground squirrels and 4 plague-infected rats were reported in California. In the Territory of Hawaii, 6 cases of plague with 5 deaths were reported, and plague-infected rats were found on the islands of Hawaii and Maui.

Cholera and yellow fever did not appear in the United States during 1932, but more than 400 cases of cholera were reported in the Philippine Islands, and yellow fever was present in South America.

During 1932, 421 cases of Rocky Mountain spotted fever with 76 deaths were reported. Of this number, 304 cases with 66 deaths occurred in the Rocky Mountain and Pacific States, while 103 cases and 10 deaths were reported in the Atlantic Seaboard States. Between these groups, South Dakota reported 13 cases and Tennessee 1 case. Montana reported the greatest number—100 cases and 17 deaths.

Forty-four States reported 7,074 deaths from pellagra in 1930, 5,773 deaths in 1931, and 4,091 deaths in 1932. Many health officers anticipated an increase in the prevalence of pellagra as a result of economic conditions, but there is yet no evidence that it has occurred. It is likely that health education and preventive measures have been instrumental in producing the reduction in the pellagra death rate.

For the year 1932, 955 cases of typhus fever with 53 deaths were reported in the United States. Of the total number of cases, three States, Alabama, Georgia, and Texas, reported more than 80 percent. The disease is most prevalent in the Southern States. There were almost three times as many cases reported in 1932 as in 1931, but some of this increase may be due to better reporting of cases.

One thousand five hundred and two cases of undulant fever, with 71 deaths, were reported in the United States during 1932. This disease was prevalent over the entire United States, with New York, Missouri, and California reporting about one third of the total number of cases.

Nine hundred and forty-five cases of tularaemia, with 31 deaths, were reported during the year 1932. More than half the cases were in six States, Illinois, Kentucky, Minnesota, Missouri, Ohio, and Virginia.

#### PREVENTION OF THE INTRODUCTION OF DISEASES FROM ABROAD

During the fiscal year no instance occurred of the importation into the United States or its dependencies of any quarantinable disease. One vessel arrived at the New Orleans quarantine station infected with typhus fever; 1 case of smallpox developed among passengers undergoing quarantine detention at the San Francisco quarantine station; 1 vessel arrived at Honolulu after having had 1 death from cholera on board; and 1 vessel with 2 cases of cholera arrived at the port of Manila. In each instance effective measures were taken at the respective stations to prevent the introduction of these diseases into United States territory.

Epidemic cholera in China required special precautionary measures at the ports of Amoy and Hong Kong. Quarantine against both ports was declared by the Quarantine Service in the Philippine Islands on July 7, 1932, and remained in effect until the epidemic had subsided in the late summer.

The prevalence of smallpox in Hong Kong, Canton, and Shanghai also made it necessary to enforce appropriate quarantine restrictions against those ports. The proximity of the Philippines to many infected centers—in some instances within 36 hours' sailing, less than

the incubation period of the quarantinable diseases—imposes a heavy quarantine responsibility on Service officers in the Orient.

During the year 10,935 vessels, 555,726 passengers, and 852,536 seamen were inspected by quarantine officers on arrival at domestic ports; at insular ports 2,982 vessels, 133,446 passengers, and 222,218 seamen were inspected, and at foreign ports 179 vessels, 69,301 passengers, and 4,570 seamen were inspected prior to departure for the United States. In addition, 4,186 airplanes arrived at airports of entry in the United States from foreign ports, requiring quarantine inspection. These planes carried 25,767 persons. Of this number, only 2,209 airplanes, carrying 20,396 persons, of whom 2,327 were aliens, were subjected to medical examination by medical officers of the Public Health Service prior to entry. The remainder, comprising 1,977 airplanes, carrying 5,371 persons, entered without the medical examination required by law, owing to permission of arrival at airports at which medical officers are not available.

Of the passengers who embarked at European ports for United States ports, 13,515 were vaccinated and 5,887 were deloused under the surveillance of medical officers of the Public Health Service at ports of embarkation, and 12,928 pieces of baggage were disinfected to safeguard against the introduction of smallpox and typhus fever.

At United States ports, 1,567 vessels were fumigated, either because of the occurrence of disease on board or for the destruction of rats to prevent the possible introduction of plague. Of the 6,088 dead rats recovered following fumigation, 3,589 were examined for plague infection.

On October 6, 1932, the regulations governing the importation of parrots into ports of the United States, prescribed in accordance with the provisions of Executive Order No. 5264, approved January 24, 1930, were revised and extended to cover all birds of the parrot family.

On March 3, 1933, the President rescinded Executive Order No. 5143, dated June 21, 1929, which restricted the transportation to the United States of passengers from certain ports in the Orient in the vicinity of which epidemics of cerebrospinal meningitis prevailed. The special regulations prescribed by the Secretary of the Treasury under the provisions of that Executive order thereupon ceased to be in effect.

The draft of the International Sanitary Convention for Air Navigation which was adopted by the Permanent Committee of the International Office of Public Hygiene in Paris at its April-May (1932) session was formally submitted to the United States for ratification. The Government of the United States has signified its willingness to sign the convention with certain reservations, similar to those made in ratifying the International Sanitary Convention of Paris, 1926, and it is anticipated that the ratification of the convention by this Government will soon be accomplished.

#### MEDICAL EXAMINATION OF ALIENS

At domestic ports, 398,574 alien passengers and 805,028 alien seamen were examined by medical officers of the Public Health Service under the immigration laws. Of this number 13,942 passengers and 991 seamen were certified for various diseases and disabilities. The most important causes of certification of alien passengers were as follows: Trachoma, 252; tuberculosis, 139; feeble-mindedness,

91; insanity, 72; syphilis, 220; and gonorrhea, 345. Of the alien seamen examined 4 were certified for trachoma; 13 for tuberculosis; 67 for syphilis; 83 for chancroid; and 162 for gonorrhea.

The procedures in the examination of aliens continued as in the preceding year, with the exception of a change in the method of examining third-class aliens at New York. This class of aliens had formerly been brought to Ellis Island for medical examination, but since August 19, 1932, in accordance with an order of that date issued by the Commissioner of Immigration at Ellis Island, they have been accorded the required medical inspection on board the vessels on which they arrived. Conditions on shipboard do not permit as thorough medical examinations and, accordingly, examination on board results in the discovery and certification of a much reduced number of defects and diseases.

During the fiscal year 26,543 applicants for immigration visas were examined by medical officers of the Public Health Service attached to American consulates in foreign countries. Of this number 17,107 were examined in American consulates in Europe, and 9,436 were examined in American consulates in the Western Hemisphere. Mental or physical defects were found in 3,980 of the applicants examined in Europe, and in 1,634 of those examined in the Western Hemisphere. One thousand four hundred and ninety of those examined in Europe and 878 of those examined in the Western Hemisphere were refused visas for medical reasons. Of 24,175 aliens who had been given a preliminary medical examination in American consulates in foreign countries and to whom visas had been issued, only 4 were certified upon arrival at a United States port as being afflicted with a defect or disease requiring mandatory deportation.

#### PREVENTION OF THE SPREAD OF CONTAGIOUS AND INFECTIOUS DISEASES IN INTERSTATE COMMERCE

In cooperation with State health agencies, 95 percent of the 2,214 sources of drinking water used by railroads and bus lines, 97 percent of the 253 sources used by vessels, and 97 percent of the 116 sources used by airplane carriers were inspected and controlled by the Public Health Service. Municipal health agencies cooperated in this work by collecting and examining approximately 5,000 samples of drinking water taken from common carriers.

Sixty-one percent of the vessels engaged in interstate commerce were issued certificates showing that their drinking and culinary water systems complied with the regulations, while 19 percent were issued temporary certificates pending inspection.

Surveys of the efficiency of State control over the sanitation of the shellfish industry continued, with such inspections in growing areas and shellfish establishments as were necessary. Approval was given to 1,301 State certificates issued during the year.

Request for assistance by States engaged in stream pollution studies and control made it advisable during the year to establish the Office of Stream Sanitation for the purpose of advising the States as to methods of procedure where the problems are interstate in character, and assisting in the correlation of data.

Public health engineering services rendered other branches of the Government required 25.8 percent of the time of the engineering



field force. Approximately 24 percent of this time was devoted to assistance to the Bureau of Indian Affairs, National Park Service, Supervising Architect's Office, Bureau of Prisons, and the Forest Service. Assistance was rendered the Lighthouse Service in developing effective water-treatment systems applicable for their tenders and lightships on the Great Lakes.

Financial and technical assistance was given to 28 States for the purpose of aiding them in demonstrating the value of properly organized local health service. These demonstrations were conducted in 172 local areas. In addition, special assistance was rendered to States by the detail of 4 regular officers and 4 technical employees, who gave particular attention to the development of local rural health units.

According to the information submitted by the States, 581 county or district health departments were in operation on December 31, 1932, a decrease of 35 from the preceding year. While this decrease is regretted, it is more apparent than real, since many of the discontinued health units were organized to meet the special health problem in drought-stricken areas and were financed very largely by special grants from the Federal Government, which terminated on June 30, 1932.

Trachoma eradication activities conducted in cooperation with the State health authorities were continued in Georgia, Tennessee, Kentucky, Missouri, and Texas. The disease is still a serious problem in the mountain regions of the South Central States.

Following the discovery of psittacosis infection among parakeets grown in California aviaries and the occurrence of several outbreaks of human cases in other States in which the infection was traceable to birds shipped in interstate commerce, it was considered advisable to place some restriction on the interstate shipment of birds of the parrot family. Accordingly, on September 28, 1932, the Acting Secretary of the Treasury promulgated an amendment to the interstate quarantine regulations requiring that all interstate shipments of psittacine birds be accompanied by a certificate from the State health authority to the effect that such birds are, so far as can be determined, from an establishment free from psittacosis infection. Transportation companies and the State board of health of California immediately gave their cooperation in the enforcement of this regulation, with the result that no case of human psittacosis was reported outside of California during the remainder of the fiscal year.

No case of human plague occurred in California. Rodent plague was reported in San Benito County, however. Plague eradication measures must be carried on continuously in the rural area about San Francisco and Oakland to keep rodent infection under control.

#### INVESTIGATIONS OF PUBLIC HEALTH PROBLEMS

The program for the cancer investigations of the Public Health Service has been a continuation of the work undertaken prior to the present fiscal year. The following lines of research were pursued: Studies of the biological effects of radiation; studies of resistance to malignant growths; biochemical and cytological studies and studies designed to secure further fundamental knowledge concerning the chemical conditions which control the life, growth, and multiplication of normal and cancer cells. The studies are of a fundamental

nature and much time and effort are required to put them into effect. Progress is being made, however, and it is believed that worth-while information on the cause and treatment of cancer will be forthcoming as a result of this work.

Studies of rheumatic heart disease, begun during the last fiscal year, have included the possible relationship of a nutritional deficiency to rheumatic fever; the role played by streptococci in the etiology of this disease; and epidemiological observations as to the relative infrequency of rheumatic fever in child-care institutions in Washington as evidence of the powerful operation of some environmental factor in the prevention of disease.

At the leprosy investigation station at Honolulu an effort was made to learn the early manifestations of leprosy by an examination of approximately 100 children who are the sons and daughters of leprosy parents confined to institutions in Honolulu. The results of the study suggest that minor neurological manifestations may be detected previous to the appearance of definite lesions of the skin, but will not permit of deductions concerning the relation of the period of contact of the child and leprosy parent and a subsequent development of leprosy in the child.

Experiments on the cultivation of the bacilli of human and rat leprosy have been continued. Investigations of the effects of diet on the course of rat leprosy, while producing striking results in some instances, do not justify the conclusion that the development of rat leprosy was affected by the dietary, under the circumstances which surrounded these tests.

Inoculations of white mice with rat leprosy have been successfully accomplished, and the disease has been reproduced by transfer from mouse to mouse as far as the third transfer. The intranasal instillation into rats of material of rat leprosy has resulted, in some instances, in the production in the lymph nodes of lesions histologically characteristic of those found in rat leprosy, a finding considered of significance in the interpretation of a probable route of introduction of rat leprosy into the animal under natural conditions.

In investigations of malaria-control measures, it has been demonstrated that dusting with paris green at 10-day intervals almost completely controls the incidence of *Anopheles quadrimaculatus* and is within the economic ability of most southern counties, while the 21-day interval was shown to be insufficient to control malaria in the average climate of the Mississippi Valley.

The plasmochin studies begun last year have been brought to a close. Results indicate that 2 centigrams of plasmochin administered weekly gave a negative result in the control or prophylaxis of malaria. Studies indicate that atabrine controls the acute attack as effectively as quinine and apparently does so a little more quickly and without the usual quinine discomfort to the patient. This study is being continued.

Tests of the pellagra-preventive value of various foodstuffs have been continued; the studies in the human being are correlated with those for black-tongue in the dog. Attempts to develop a satisfactory method of evaluating the potency of concentrates of the pellagra-preventive factor, using the albino rat, have been continued, and during the year several crude yeast fractions were given a preliminary test.

Studies of the epidemiology of plague and measures for its control in the Hawaiian Islands have been continued. In the two regions where plague now exists it is endemic among field rats. The intensive and constant distribution of poison appears to be the only method which may eventually reduce the rodent population of the fields to a point where plague may be adequately controlled. The identification of a new species of the *Xenopsylla* family which was noted last year was identified and named *Xenopsylla hawaiiensis* by Dr. Karl Jordan. *Xenopsylla hawaiiensis* is evidently the plague-transmitting agent responsible for the existence of the endemic type of rural infection found in the Hawaiian Islands.

In the investigation of the flea infestation of rats over 19,755 rats were collected, 20 percent of which were *Rattus hawaiiensis*, a species formerly believed to be nearly extinct.

Studies of psittacosis were resumed during the year and a psittacosis laboratory was established at Pasadena, Calif. Thirty-seven cases of human psittacosis, with nine deaths, were reported in the United States during the year. To date there have been no laboratory infections contracted by the personnel engaged in work with this highly communicable disease, a fact attributed to the efficiency of the technique developed by service personnel.

At the Rocky Mountain spotted fever laboratory 205,000 cc of the Public Health Service vaccine for the prevention of this disease was manufactured for the season of 1933. This is an increase of 3,600 percent since 1926, when this vaccine was first distributed. The demand for the vaccine continues to increase and the entire output has been distributed. The heaviest call has been from the Rocky Mountain States, but approximately 10,500 cc were forwarded to the National Institute of Health for distribution in the East.

Observations of the agglutination of *proteus* X organisms by spotted fever sera indicate that agglutinins are seldom present in sufficient titer to be of diagnostic value before the tenth day of illness, and in a considerable percentage of cases the highest agglutinin titer is present in sera secured during early convalescence. In some cases agglutinins for the several strains of *proteus* X used as antigen are never present in the blood in sufficient titer to be of diagnostic value.

The identity of the so-called "Sao Paulo typhus" of Brazil and Rocky Mountain spotted fever has been established by workers at both the Hamilton laboratory and at the National Institute of Health, and it has also been demonstrated by workers at the National Institute of Health that a close immunological relationship exists between spotted fever and the *fièvre boutonneuse* of the Mediterranean littoral.

There has been a marked increase in the prevalence of Rocky Mountain spotted fever in Wyoming during the spring of 1933. There has also been some increase in California, Nevada, Colorado, and Washington. During the year the infection was reported from Iowa for the first time.

Child hygiene investigations have included studies of the vision and hearing of school children to determine the progress of defective vision or hearing over a period of years and to determine methods of prevention; studies of the physical status, growth, and development of school children; studies of the mental status of children having had some type of abnormal birth; and studies of the relation of dental caries to diet and climate among Indian school children.

Dental studies with regard to the distribution of mottled enamel in the United States indicate that there are probably close to 200 areas where this condition is prevalent, divided among 22 States. Laboratory studies in relationship to the mottled-enamel investigations have been directed towards the determination of the minimum amount of fluorides in water which will cause the condition.

Industrial dermatitis occurring among the employees of certain industries has been studied in an endeavor to determine the irritant causing the outbreak and to recommend measures for its control. During the year investigations were made in the rubber, canning, cigarmaking, cotton milling, sirup manufacturing, and rayon industries.

Studies of industrial dusts in relation to the health of workers in dusty trades have included additional surveys in the marble-, talc-, slate-, and granite-quarrying industries, air abrasive blasting, and the size-frequency of industrial dusts. Industrial poisoning studies have dealt with the lead hazard in a storage-battery plant, the health hazard of radium dial painting, and the toxicity of osmic tetroxide. In connection with the study of the pollution of city air, a further study was made on the amount of lead dust and fumes normally present in the air. Lead in amounts from 0.1 to 0.13 milligram per 10 cubic meters of air was found present in industrial establishments. On congested street intersections the average amount found was 0.09 milligram. During the year a study was begun to determine the effect of the dust of anthracite-coal mines on the health of workers. This study is being made in the hard-coal fields of Pennsylvania and was undertaken at the request of the Governor of that State and has met with the hearty approval of the hard-coal operators and labor unions. The study of the frequency of sickness among industrial employees was continued for the twelfth consecutive year.

Milk sanitation investigations included studies to determine the necessary specifications for pasteurization machinery to insure that any given time and temperature combination will be properly applied in practice; the bactericidal treatment of milk containers and equipment; and the proper treatment of udders prior to milking. In addition, the personnel have rendered advisory assistance upon request to State and city health departments in connection with the enforcement of the Public Health Service milk ordinance.

In order to evaluate prevailing public health practices, it was deemed necessary to study a group of individuals receiving one or more of the various services supplied by local health departments. Such a study was inaugurated in Brunswick and Greensville Counties, Va., and is being extended to other counties in order to observe the work of small county health departments. The results of these investigations will be furnished to local health departments for their guidance. In addition, general consultation service is being rendered to State and local health departments upon request.

In an effort to determine the effect of the depression upon health, information was collected on sickness and mortality in a group of unemployed families. A 4-year family income history and a 3-month illness record were obtained by canvass of about 1,000 families in each of 10 communities located in 8 large cities and 2 more or less rural places. Preliminary analysis indicates higher sickness rates among the poor, particularly in the case of the more serious illnesses



that caused inability to work or that confined the patient to bed. It also appears that those families who were moderately comfortable in 1929 but who had been in poor circumstances for 2 to 3 years had more sickness than those who had only recently become unemployed and poor.

The final papers in the series reporting the results of the respiratory studies have been published. These studies have added to the knowledge of the epidemiology of these diseases, including such facts as the extent of illness from this cause, the age and other groups most susceptible to attack and to serious complications when attacked.

Certain stream-pollution studies undertaken during recent years were concluded. These include experimental studies of water purification, the field study of the pollution and natural purification of the Ohio River, and the experimental studies of the natural purification of polluted waters. With the termination of these studies, two principal lines of research have been undertaken: (1) The elucidation of natural reactions occurring during the process of oxidation of organic matter in polluted streams, and (2) factors that interfere with the efficient functioning of biological oxidation processes of sewage treatment.

In the investigations on the relationship of rats and fleas to typhus fever, a survey of the rodent population and a collection of rat parasites was undertaken at Savannah, Ga. Coincident with this, a record was kept of the occurrence of typhus in the human population of that city, and records of the location where rats were trapped were checked with the location of cases of typhus.

Granular conjunctivitis has been studied in two series of monkeys. In the one series the condition was induced by direct transfer of secretions from trachomatous eyes and in the other by inoculation from cultures of *Bacterium granulosis*. A vaccine made from *Bacterium granulosis* failed to protect the animals against either condition.

Tularaemia was reported by health officers from 39 States and the District of Columbia during 1932, a total of 933 cases being reported as compared with 675 for 1931.

Studies upon bacterial variants, or mutants, have been continued and, as has been the experience of previous investigators, changes have been produced in bacterial morphology and behavior which are believed due to genuine mutations. Since bacteriologists have rejected the claims to production of genuine mutants on the ground that the experiments have never completely excluded the possibility of contaminations, the chief effort during the year has been toward the development of a technique which excludes contaminating organisms and at the same time provides an opportunity for the study of causes of variants and mutants among bacterial species.

The grouping of 240 hemolytic streptococci from a great variety of disease sources from many parts of the world, according to sensitivity to three races of bacteriophage, gives promise that relationships may be revealed which may be useful in tracing the source of epidemics.

A provisional unit for determining the potency of *Vibrio septique* antitoxin was established which is somewhat larger than the units proposed by Great Britain, France, and the Argentine Republic, but it is hoped that agreement will be reached among the various countries looking to the establishment of an international standard.

A practical method for the manufacture of a scarlet-fever prophylactic (streptococcus toxoid) has been completed. Sufficient toxoid may be given in 3 doses to induce immunity in over 80 percent of those tested.

Studies with alum-precipitated diphtheria toxoid have shown that 1 dose of 1 cc is at least as effective as 2 doses of 1 cc each of original unmodified toxoid.

In studies of meningococcic meningitis, emphasis has been placed on the production of meningitis experimentally in animals, chiefly with the object of finding a method of testing therapeutic sera better than any method now available.

The rate of hydrolysis and the disintegration products of the phosphoric and phosphorous ester under certain conditions *in vitro* have been studied in relation to their pharmacologic action. This investigation disclosed a fundamental difference in the hydrolysis of the esters in aqueous and alcoholic systems. Besides suggesting a probable mechanism for the peculiar action of some of the esters in the animal body, these observations also indicate a chemical method for the quantitative estimation of certain of the phosphoric esters in animal tissues.

Continued sugar researches have yielded data of value in the study of the physiological chemistry of the sugars and have led to the discovery of new sugar derivatives and the development of methods for their isolation in pure condition.

#### THE MARINE HOSPITALS AND OTHER RELIEF STATIONS

Hospital and out-patient care was furnished to American seamen and other legal beneficiaries in 154 ports, 302,478 accredited persons applying for treatment or other medical service. The Coast Guard, for whose personnel of 13,181 the Public Health Service has sole medical responsibility, was served at the regular relief stations and 102 other places; 23 medical and dental officers were also assigned to Coast Guard ships and shore stations. The usual assistance was given to the Employees' Compensation Commission in treating injured Federal employees, to the Civil Service Commission in examining applicants and employees, and to the other Government agencies that utilize Public Health Service facilities. The number of patients at the National Leper Home increased to 370.

Treatment of ex-service men and women, a major function from 1919 to 1922 when the Public Health Service performed more than 80 percent of that work, has been continued wherever required by the Administrator of Veterans' Affairs. From 1923 to 1933, inclusive, 66,551 veterans received an aggregate of nearly 2,000,000 days in marine hospitals in addition to out-patient treatment and physical examinations. Because of recent legislation and a change of policy, the care of veterans has now become of minor importance; only 37 such patients remained in the marine hospitals on June 30.

#### PREVENTION AND CONTROL OF VENEREAL DISEASES

During the fiscal year the work relating to the venereal diseases has continued with satisfactory progress. In general, the activities may be said to embrace research, cooperative, informative, and preventive work.

Research experiments in the laboratory have been carried on in the field of personal prophylaxis, the study of the carrier problem in syphilis has been furthered, and an endeavor has been made to explain certain peculiar phenomena in experimental syphilis on the basis of a life cycle of the *Spirocheta pallida*. Clinically, a study of the late effects of untreated syphilis in the Negro was instituted during which it was necessary, in order to uncover the cases desired for the study, to make a serological survey of 4,025 Negroes of the far South. Of the 4,025 Negroes, 907, or 22 percent, gave a definite positive test for syphilis on 2 occasions. Four hundred Negro males past the age of 25 were obtained in this group and subjected to a thorough physical and roentgenological examination. A very cursory analysis of the records indicates that involvement of the cardiovascular system of the Negro in the syphilitic process offers a very serious problem.

The 1-day census method of obtaining a report of all cases of venereal diseases under treatment has also been continued and the prevalence established in 1 county including a fairly large city. The results of such surveys in two other localities have been published. The trend of the venereal diseases as ascertained by resurveys made in 16 communities last year was also the subject of a scientific paper.

Forty-seven States reported 386,597 cases of the venereal diseases to the Public Health Service during the year. Continued assistance was extended to several States in the development of State venereal disease programs or in furthering this work within their boundaries.

The distribution of educational pamphlets to the public and of informative reprints and other publications to physicians has been curtailed to some extent owing to limited funds; but, in spite of this, 85,203 pamphlets were distributed to State boards and departments of health and to private individuals. Publication of the monthly abstract journal, "Venereal Disease Information", was also continued.

The work of the Public Health Service Clinic at Hot Springs, Ark., was conducted as in the past, and the limited personnel made a remarkable showing in its capacity for efficiently handling a very large group of patients. The educational work, both in connection with the extending of post-graduate courses to physicians, and the preparation of scientific papers also constituted an important function.

#### NARCOTIC FARMS AND MEDICAL AND PSYCHIATRIC CARE OF FEDERAL PRISONERS

The collection of data dealing with the medico-social aspects of drug addiction was continued during the fiscal year. A further analysis was made of the legal distribution of narcotic drugs throughout the United States in connection with the studies of the abusive use of such drugs and of the quantities necessary for supplying the medical and scientific needs of the country. Studies of the nature of drug addiction and methods of treatment were also continued.

Construction of the superstructure on the first United States Narcotic Farm, near Lexington, Ky., was begun on March 25, 1933. On May 26, 1933, title was acquired to the property selected as the site for the second United States Narcotic Farm at Fort Worth, Tex.

The Public Health Service continued to supervise and furnish the medical, psychiatric, and technical services at the penal and correc-

tional institutions under the control of the Department of Justice. Five new institutions were brought within the scope of these activities during the past fiscal year, making a total of 15 medical units operated by the Public Health Service at Federal penal and correctional institutions at the close of the fiscal year.

#### COOPERATION WITH OTHER AGENCIES

During the fiscal year the Public Health Service continued its cooperative activities with official and unofficial organizations in matters pertaining to the public health. A number of these cooperative activities are required by law and the remainder are deemed essential in the interests of economical and efficient administration. By means of this cooperation, similar or related activities are coordinated and duplication of effort is avoided. The cooperative activities during the past fiscal year have been, in general, similar to those of the preceding 5 or 6 years.

The Public Health Service desires to acknowledge assistance of the following:

The Department of Health of Puerto Rico for the use of its laboratories; the New York State Institute for the Study of Malignant Diseases, for the care and study of cases of suspected cancer; Harvard University Medical School, for furnishing laboratory space for field investigations of cancer; Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, and Mount Desert Island Biological Laboratory, Salisbury Cove, Mount Desert Island, Maine, in cancer research; Milledgeville State Hospital, Milledgeville, Ga., in the conduct of pellagra studies; University of Minnesota Medical School, in experimental studies of the occurrence of Rocky Mountain spotted fever in nature; Johns Hopkins Hospital and the Baltimore Social Service Exchange, in a study of the mental status of children of various types of birth; Milbank Memorial Fund, in the collection and analysis of statistical data with reference to specific health problems; State Hospital, Columbia, S.C., by furnishing laboratory space for studies of malarial inoculation in paresis therapy; the State Boards of Health of Florida, Wisconsin, Michigan; the State laboratories of North Carolina and Maryland and the University of Kentucky, for Wassermann tests; Health Department of Pasadena, Calif., in furnishing a laboratory building for field investigations of psittacosis; District of Columbia Departments of Health and Education, in the studies of hearing and vision of school children and the District Health Department in connection with an epidemiological study of rheumatic heart disease; hospitals, clinics, and other institutions in the District of Columbia, in connection with the clinical investigations of rheumatic heart disease; Tennessee Academy of Science, for furnishing quarters for studies of mosquito control.

#### NEW ADMINISTRATION BUILDING

The new administration building of the Public Health Service at Constitution Avenue and Nineteenth Street NW. was occupied during the fiscal year. The actual moving into the new building occurred during the period May 11 to May 16, 1933. From the establishment of the Service (then called Marine Hospital Service) on July 16, 1798, to 1870 the affairs of the Public Health Service



were conducted by a clerk in the Treasury Department. Effective August 1, 1870, the Service was organized in accordance with the act approved June 29, 1870. It appears that it continued to be located in the Treasury Department Building until 1876, when it was moved to 1419-21 G Street NW. That location was occupied until July 1888, when transfer was made to 1306-8 F Street NW. This location was vacated and the Public Health Service was transferred to the Butler Building, 3 B Street SE., June 11, 1891. The Butler Building was vacated on April 19, 1929. During the World War and immediately following, when the burden of the medical care of ex-service men and women was placed upon the Public Health Service, it became necessary to expand to meet this emergency. Accordingly, the larger divisions were transferred to Temporary Building C at 16 Seventh Street SW. For approximately 10 years the Surgeon General spent half a day at the Butler Building and the remainder at C Building. With the demolition of the Butler Building, to make way for the new House Office Building Annex, all divisions of the Public Health Service were moved, in April 1929, to Temporary Building C. The completion of the new administration building for the Public Health Service and its occupancy mark another important milestone in housing the administrative headquarters of the Service.

#### RECOMMENDATIONS

The prevention of disease and the promotion of public health are of vital importance to the Nation. Recommendations as to methods of improving the public health in the most economical and efficient manner are necessary from time to time.

New problems in the field of public health are constantly arising. As recent examples may be mentioned the outbreak of epidemic encephalitis in St. Louis, the identification of Rocky Mountain spotted fever of the eastern type, along the Atlantic seaboard of the United States, and the recognition of parrot fever, or psittacosis, as an endemic disease among birds of the parrot family in certain sections of the Pacific coast. Constant efforts are required for the detection and prevention of new dangers to the public health that arise from time to time.

The recommendations submitted herewith constitute the most important needs at the present time.

#### SCIENTIFIC RESEARCH

One of the most important functions of the Federal Government in connection with public health is the conduct of scientific investigations for the purpose of devising new methods for preventing disease and ascertaining the importance and extent of new problems as they arise.

In connection with the present program of economy, it has been necessary materially to curtail a number of studies that could be profitably pursued and which are of great public-health importance. No field of public-health research is without important problems, but in some fields there is a more pressing need to extend the work now under investigation. It is hoped that the research activities of the Public Health Service may be restored to normal as rapidly as the financial policy of the Federal Government will permit.

## STATE AND LOCAL HEALTH WORK

The lack of effective local health organization in most rural areas and in many of the smaller cities is a serious handicap to the application of public-health measures. This difficulty is encountered repeatedly when attempting to prevent the spread of epidemic diseases between the States. For a number of years, therefore, the Public Health Service has worked with the States in building up local health organizations in the rural areas, particularly where the need is greatest. Owing to limitation in funds and personnel, this work has been confined for the most part to local studies and demonstrations. The time has arrived when the Public Health Service should enter into cooperation with States for the support of local health organizations on a more substantial basis than has obtained in the past as a part of the national defense against disease.

## MARITIME QUARANTINE

The ratification by the United States, as soon as practicable, of the International Sanitary Convention for Air Navigation, with certain minor reservations, is recommended. This convention will not only facilitate the observation of measures for the protection of the United States against the introduction of quarantinable diseases through air commerce originating in infected foreign ports, but it will also assist in the prevention of the international dissemination of the infection of such diseases from infected areas throughout the world, which ultimately serves to reduce the exposure of the United States as well as other noninfected countries to possible infection. In addition, the convention would permit the imposition of only necessary coordinated and uniform restrictions in the various countries, and this would serve to promote international air commerce, in the extension of which American companies are actively engaged.

## MARINE HOSPITALS

Appropriations in normal amounts should be restored to enable the marine hospitals and other relief stations to function without degrading the standards of medical care or repudiating legal obligations. The building program should be completed.

## PERSONNEL

The reduction of personnel because of the economy requirements has produced an acute shortage of medical officers, particularly in the commissioned corps. It has been difficult to meet emergencies such as the outbreak of epidemic encephalitis in St. Louis and the mobilization of Coast Guard destroyers in and around Cuba. These two emergencies, which occurred simultaneously, necessitated the withdrawal of more than 20 commissioned medical officers from other important work. The opening of new units of Federal penal and correctional institutions renders necessary the replacement of commissioned officers who have been placed upon the retired list. It is essential to the proper maintenance and development of the commissioned corps that a certain number of officers be admitted in the grade of assistant surgeon each year.

H. S. CUMMING,  
*Surgeon General.*

Hon. WILLIAM H. WOODIN,  
*Secretary of the Treasury.*

## DIVISION OF SCIENTIFIC RESEARCH

In charge of Asst. Surg. Gen. L. R. THOMPSON

### CANCER

The work conducted under the direction of Med. Dir. J. W. Schereschewsky at the office of Field Investigations of Cancer, located at the Harvard Medical School, Boston, Mass., during the past fiscal year was a continuation of the program of the preceding year. These studies have included the biological action of X-rays, studies of mitogenetic radiation and the biological effects of electromagnetic radiation. Reports on the latter two subjects have been prepared and are now in press.

#### STUDIES OF RESISTANCE TO MALIGNANT GROWTHS

The study of the general problem of immune reactions to malignant growths was continued by Biologist H. B. Andervont.

*Cross immunity studies.*—The extent to which immunity against one type of transplantable tumor might induce resistance against other types was further studied in stock animals during the year.

The results obtained in a large number of experiments may be summarized as follows: Immunity following tail inoculation may be induced by carcinomas 206 and 11 and sarcomas 37 and 180, respectively. Induced resistance to sarcoma 180 is likewise effective against carcinomas 206, 11, and 63. However, immunity induced against these three carcinomas is not effective against sarcoma 180. Neither sarcoma 37 nor sarcoma 180 produce immunity against each other. It was found that the duration of immunity against sarcoma 180 was at least 10 months.

*Effect of immunity against a transplantable tumor upon the subsequent development of spontaneous tumor.*—Through the kind cooperation of Dr. C. C. Little, Director of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, arrangements were made for Biologist Andervont to test the various strains of mice at that institution known to have a high spontaneous tumor rate for their ability to become immunized through the method of tail inoculations to mouse sarcoma 180. An effort to immunize mice against transplants of spontaneous tumors originating in a number of their particular strain by means of induced resistance to sarcoma 180 failed because resistance to sarcoma 180 could not be established in these high-tumor strains.

*Cooperative work at the Roscoe B. Jackson Memorial Laboratory.*—The results of preliminary work conducted at Bar Harbor by Biologist Andervont made it desirable to explore still further the relation between the ability to acquire immunity to a transplantable tumor and susceptibility to spontaneous tumors. Dr. John J. Bittner, of the staff of the Laboratory, was appointed as special expert to carry on this phase of the studies. Studies were simultaneously carried on at Boston. This cooperative work is still in progress.

*Effect of bacterial washings upon spontaneous tumors.*—In the preceding annual report mention was made of the effects of the injection of bacterial washings upon mouse sarcoma 180, as originally reported upon the liposarcoma of guinea pigs by Gratia and Linz and upon mouse sarcoma 180 by Shwartzman and Michallovsky. The injection of these washings produces hemorrhages in the tumor, and apparently in no other location. The intratumoral hemorrhages are frequently followed by regression of the tumor. These results were confirmed at this laboratory, so far as concerns sarcoma 180. The injection of the bacterial washings was without effect upon the growth of spontaneous tumors.

*Effect of injections of trypan blue upon susceptibility to spontaneous tumor transplants.*—During the preceding year, it was noted that the injection of trypan blue prevented mice from becoming resistant to mouse sarcoma 180 and, further, that the injection of resistant mice with this material "broke down" an established immunity so that they became susceptible once more to inoculation with the sarcoma.

In pure strains of mice exhibiting a high spontaneous tumor rate, transplants of a spontaneous tumor arising in a member of the strain will, when transplanted, "take" in practically all other members of the strain. Inoculations from the tumor, however, are negative when attempted upon the members of another strain, provided the strain be pure. This resistance to the transplantation of fragments of spontaneous tumor from an alien strain disappeared with the use of trypan blue.

*Studies with pure strain mice from the Roscoe B. Jackson Memorial Laboratory.*—In investigations to determine whether other strains of transplantable tumor propagated at this laboratory were capable of inducing resistance in these mice, it was found that sarcoma 37 immunizes two strains of spontaneous tumor-bearing mice which cannot be immunized to mouse sarcoma 180. It was also found that carcinoma 63 induces immunity in several strains of these mice. This tumor, in the past, has been generally regarded as a nonimmunizing, transplantable neoplasm. The fact that concomitant immunity can be established in several pure strains of mice exhibiting a high spontaneous tumor rate emphasizes the importance of taking both the strain and the tumor into consideration when experiments dealing with immunity to transplantable growths are undertaken.

#### BIOCHEMICAL STUDIES

*Effects of calcium salts on tumor growth.*—More than 1,200 tumor-bearing mice were employed in this study; a number of calcium salts, including the lactate and gluconate, were administered in the diet and drink. The results were essentially negative.

*Determination of the calcium ion concentration of the blood.*—In the parallel investigation of the effects of calcium salts on tumor growth, essentially negative results were obtained. Further study on the determination of the calcium ion concentration of the blood, begun in the previous fiscal year, was discontinued.

*Studies of fluid exchange in malignant tissue.*—In continuing studies begun at the end of the preceding fiscal year, on the relation of tumor growth to certain basic physicochemical processes of the cell, the phenomena of cell permeability, inhibition, and reactions of the cell-wall to surrounding media of various composition are being investi-



gated *in vitro*. One phase of these investigations, bearing upon the swelling of tumor cells *in vitro* in various types of solutions, carried on in collaboration with Cytologist L. C. Fogg, has been completed and a report is being prepared for publication.

#### CYTOLOGICAL STUDIES

The first part of the fiscal year was spent by Cytologist L. C. Fogg in the development and organization of a cytological laboratory which could be adapted to two distinct lines of work, namely, to experimental tissue culture, and to general cytology. This laboratory has now been organized.

*Tissue culture work.*—Both normal and malignant cells have been grown and observed under conditions that varied as to pH, modifications of the media, heterologous media, types of food, and other changing conditions. The use of vital strains aided in these observations. Attention was given to comparative growth rates, changes in cell volume, and to intracellular characteristics such as the chromosomes, the nucleoli, the central area (centrosphere), mito-chondria, Golgi bodies, plastids, vacuoles, and cell membranes.

*Studies of proteolysis.*—The phenomenon of fibrolysis observed in cell cultures has been studied during the year, especially with respect to its variation according to the media, the type of tissue, and when cells are associated in the culture with other tissue cells. The investigation of methods for inhibiting the lysis without changing the growth rate is also being carried out.

In the course of these studies the observation was made that culture medium, which had been liquefied by tumor cells, acts in manner similar to the action of tumor extracts. As is well known, these act as accelerators to the growth of normal cells in tissue cultures in the same manner as do the extracts of embryonic tissue which are used regularly for this purpose. Although tumor cells will not grow in it, lysed plasma acts as an accelerator to the growth of normal cells when added to the culture medium.

*Water equilibria of cells.*—In collaboration with Biochemist Shear, and using the hanging drop technique, direct observations on the water equilibria of various types of cell were made during the year. These data have yielded a considerable body of interesting results which are being prepared for publication.

#### HEART DISEASE

Investigations of heart disease have been continued under the direction of Medical Director A. M. Stimson. Study has been confined almost exclusively to the subject of rheumatic heart disease.

On account of the strong probability suggested by epidemiological studies that some particular environmental factor was responsible at least for predisposition to rheumatic fever, and further, that some nutritional deficiency would seem the most likely one, a series of dogs was kept on a vitamin A deficient diet and then inoculated with streptococci isolated from rheumatic fever cases. These organisms were also inoculated into monkeys, rabbits, and mice.

Blood specimens for culture were secured from over a hundred patients, including those suffering from rheumatic fever and active rheumatic heart disease, and others taken for control purposes. From

some patients a number of specimens were taken at various times. Certain of the organisms thus obtained were inoculated into some 50 dogs and 40 monkeys. A larger number of rabbits and mice were employed.

As a result of these experiments it can be said only that, while the organisms to which these animals were exposed showed a tendency to produce lesions in the heart and joints, this tendency was by no means uniform, and the lesions were not of a type corresponding to those of rheumatic fever in human beings.

The epidemiological observations were made for the purpose of estimating the prevalence and distribution of rheumatic heart disease in Washington and endeavoring to detect any environmental or other factors which might have a bearing on the etiology of the disease. The evidence collected to date tends to confirm the observation of others that rheumatic fever is predominately a disease of the lower economic groups. On the other hand, the evidence secured from institutions for children in Washington indicates that this disease is very rarely observed among the inmates, who are nevertheless recruited from among the lower economic classes.

The following articles were prepared for publication during the year: Observations on Vitamin A Deficiency in Dogs (Pub. Health Rept., Apr. 28, 1933); The Present Conception of the Etiology of Rheumatic Fever (accepted for publication in the Annals of the District of Columbia Medical Association); Heart Disease in Marine Hospitals (Pub. Health Rept., May 26, 1933); A Form of Experimental Endocarditis Produced in Rabbits. (In press.)

### LEPROSY

Studies at the Leprosy Investigation Station, Honolulu, Hawaii and the providing of medical relief for patients of the adjoining Territorial Receiving Station and Hospital, have been under the direction of Surg. N. E. Wayson.

*Clinical studies.*—An effort has been made to learn the early manifestations of leprosy by an examination of approximately 100 children who are the sons and daughters of leprous parents and who are confined to institutions in Honolulu. The results will not justify deductions concerning the relation of the period of contact of the child and leprous parent and a subsequent development of leprosy in the child.

A comparison of the beneficial effects to be obtained by the destruction of individual lesions through the application of carbon-dioxide snow or the intradermal injection of an irritant oil, such as that of iodized chaulmoogra esters, has been carried on throughout the year. There appears to be no material difference in the end results obtained by these two methods.

During the latter part of the year observations were made, and are being continued, of the effect of administering 3 to 5 grains of the iodides daily to a selected group of patients. It is hoped that a method of therapy may be evolved which will be of value.

A test has been made of 50 patients with extracts and refined proteids from tubercule bacilli and other acid-fast bacteria, including an extract of one grown from a leprous nodule. The reactions to the intradermal injections in these patients of over 15 years of age seem definitely more indicative of the presence of clinical tuberculosis than

obtains among persons of similar ages in Honolulu and in continental United States.

*Experimental investigations.*—Experiments were continued during the first half of the year to cultivate the bacilli of human leprosy and of rat leprosy. The methods used were confined largely to media composed of chick embryo, the embryonic juice of chicks, and Tyrode solution. Numerous successive transfers were accomplished by this method. However, the inoculation of rats with the acid-fast bacteria grown in these cultures from rat leprosy did not result in the production of the disease. The subcutaneous injection of rats with these organisms was followed in a few instances by the development of a small granuloma which subsequently healed.

Investigations of the effects of diet on the course of rat leprosy, which were in process during the preceding year, were continued. While some of the results were striking, there did not seem to be a consistency in the various experiments and in the different groups of animals which would justify a final conclusion that the development of rat leprosy was affected by the dietary under the circumstances of these tests.

Inoculations of white mice with rat leprosy have been successfully accomplished, and the disease has been reproduced by transfer from mouse to mouse as far as the third transfer. The disease in the mouse resembles that in the rat very closely. Some comparisons are being made of infections of mice by inoculation with the bacteria of avian tuberculosis and with material from lesions of rat leprosy.

The intranasal instillation into rats of material of rat leprosy has resulted, in some instances, in the production in the lymph nodes of lesions histologically characteristic of those found in rat leprosy. This finding is considered of significance in the interpretation of a probable route of introduction of rat leprosy into the animal under natural conditions, though the development of cutaneous lesions, successive to this manner of inoculation, has not yet been observed in areas remote from these nodes.

## MALARIA

Investigations of malaria continued under the direction of Surg. L. L. Williams, Jr.

*Paris green studies.*—The 10-day interval dusting study carried on in Dougherty County, Ga., under the direction of Surg. T. H. D. Griffiths has been completed. This 4-year study has demonstrated that a 10-day interval of paris green dusting almost completely controls the incidence of *Anopheles quadrimaculatus* when applied on a county-wide basis by a county organization and is within the economic ability of an average southern county. It is believed that the 21-day interval dusting study, which has been in progress for 4 years, has definitely shown that this interval between applications of paris green is insufficient to control malaria in the average climate of the Mississippi Valley. Although the result insofar as regards malaria control was negative, valuable information was gathered concerning the effectiveness of various types and methods of paris green distribution and unit costs.

*Plasmochin studies.*—During the preceding year San. Eng. W. H. W. Komp inaugurated in Panama, in cooperation with the Gorgas

Memorial Laboratory, studies on the effect of plasmochin as a drug-method in the control of malaria. This study was completed during the year. Although there was a reasonable reduction in the infective rate among the mosquitoes, 12 months of observation, with a blood index each month, showed practically the same fluctuation in the malaria rate in the villages where plasmochin was administered as occurred in the villages where quinine only was administered. The report is being published in a Gorgas Memorial Laboratory bulletin.

*Atabrine studies.*—Preliminary studies with atabrine were commenced last year. Mr. Komp, at the Gorgas Memorial Laboratory in Panama, and Dr. Bruce Mayne, at the State Hospital in Columbia, S.C., have checked the effect of atabrine in doses of  $1\frac{1}{2}$  grains three times a day for 5 days on the clinical course of acute malaria of all three types (*P. malariae*, *vivax*, and *falciparum*). Their experience is that atabrine controls the acute attack as effectively as quinine, and apparently does so a little more quickly and without the usual quinine discomfort to the patient. In addition, Mr. Komp commenced an extensive field experiment in five new villages on the Chagres River in Panama, with a total population of approximately 500, to determine whether wholesale treatment with atabrine in an infected population would control the rate of malarial infection. This study will be continued.

*Malarial inoculation in paresis therapy.*—In cooperation with the State Hospital for the Insane at Columbia, S.C., Dr. Mayne has established strains of benign tertian, of quartan, and a relatively mild strain of estivo-autumnal malaria. He has experimented extensively with shipments of blood and live mosquitoes and with sporozoite material dissected from infected anophelines.

*Florida study.*—Surg. T. H. D. Griffiths has established headquarters at Jacksonville, Fla., to cooperate with the State health department for malaria control through county health departments. Malaria control will be inaugurated only at the most heavily infected foci. The effect on the malaria rate of the county as a whole and the effect on the rate at the lesser infected foci will be studied as the heavy foci of infection are eliminated.

*Tennessee study.*—At Reelfoot Lake in west Tennessee, Senior San. Eng. J. A. Le Prince and Passed Asst. San. Eng. H. A. Johnson have set up equipment and traps to test various methods of attracting *Anopheles* to their destruction. The effects of size, shape, and location of traps and of various smells, colors, and sound are under study.

*Studies of salt-marsh mosquito control.*—Surveys of breeding areas of salt marsh mosquitoes and methods for control of production have been made under technical assistant in sanitary engineering C. T. Carnahan, in the areas about Norfolk, Va., in approximately half of the coastal section of North Carolina, and on the Gulf Coast in the regions around Galveston and Port Arthur, Tex. Through the headquarters office, assistance was given to similar surveys made in Maryland and Delaware.

*Studies of airplane convection of mosquitoes.*—Studies were continued, in cooperation with the Division of Foreign Quarantine, of the convection of *Aedes aegypti* by means of airplanes from possibly infected territory to the southern part of this country and the possibility of the introduction of new species of mosquitoes. No mosquitoes arrived alive at any of our airports when a plane, including those



known to be loaded with live mosquitoes, had been sprayed during the flight with an oil extract of pyrethrum flowers.

*Microscopic examinations.*—Of 18,000 thick-film slides examined during the year from 13 counties in Florida, Georgia, and Tennessee, 6.68 percent were found positive.

### NUTRITIONAL DISEASES

The nutrition studies under the direction of Surg. G. A. Wheeler, as in the past, have been primarily concerned with the determination of the pellagra-preventive value of various foodstuffs. The work at the Milledgeville State Hospital, Milledgeville, Ga., has been under the immediate supervision of Asst. Surg. D. J. Hunt.

The results of the study of the pellagra-preventive value of collards, greens, cabbage, mustard greens, and kale were submitted for publication. All of these vegetables may be considered as very practicable contributory sources of the pellagra-preventive factor. A special report was made of the tests of autoclaved yeast, haddock, and English peas (Pub. Health Rept., Jan. 20, 1933). The autoclaved yeast and English peas are satisfactory sources of the preventive factor, while the haddock contains a relatively small amount. Tests of onions, lettuce, lean smoked pork shoulder, and peanut meal are now in progress.

The studies at the National Institute of Health were continued under the immediate supervision of Surgeon Wheeler, with the assistance of Passed Asst. Surg. W. H. Sebrell.

The laboratory studies have been for the most part concerned with the determination of the probable pellagra-preventive value of various foods by tests in the dog correlated with the human tests.

The results of tests in the dog of a number of foods have been submitted for publication. Canned corned beef, canned evaporated milk, canned turnip greens, and peanut meal showed satisfactory preventive value. Canned spinach, canned mustard greens, red kidney beans, and collards showed some degree of protection, but were less satisfactory. The Irish potatoes and sweetpotatoes, rolled oats, rye meal, onions, evaporated apples, and navy beans showed no appreciable preventive value.

The tests in the dog of canned chicken and prunes were completed, with the indication that chicken contains a sufficient amount of the blacktongue-preventive factor fully to protect against the disease, while prunes have little or no preventive value.

Tests in the dog of the following foods are still in progress at the end of the fiscal year: Cottonseed meal, evaporated peaches, meat of the domestic rabbit, and lean smoked pork.

The study of the effects of a deficiency of chlorides on the red blood cells and hemoglobin of dogs is in progress at the close of the year.

Attempts to develop a satisfactory method of evaluating the potency of concentrates of the pellagra-preventive factor, using the albino rat, were continued, and several crude yeast fractions were given a preliminary test.

The manuscript of the study of yellow liver (fatty infiltration) in dogs was submitted for publication. The results of this study indicated that the condition is due either to a deficiency of vitamin G or some closely related food factor.

## PLAGUE

The study of the epidemiology of plague and measures for its control in the Hawaiian Islands, begun last year in cooperation with the Territorial health authorities, has been continued under the direction of Surg. C. R. Eskey.

In the two rural districts of Hamakua, Hawaii, and Makwao, Maui, the infection has shown considerable activity. During the interval from November 14, 1932, to February 3, 1933, 21 plague-infected rats were found on a large plantation in Hamakua. There were only two human cases associated with the rat epizootic, the last being reported February 6, 1933. There were three human cases on Maui; the latest occurred September 18, 1932. Eight plague-infected rats were discovered in the Makawao district, the latest on January 25, 1932.

In the two regions where plague now exists in the Hawaiian Islands, it is endemic among field rats. Therefore, the intensive and constant distribution of poison appears to be the only measure which may eventually reduce the rat population of the fields to a point where plague may be adequately controlled.

The investigation of the flea infestation of rats in and near communities where plague has occurred or is now present in the Hawaiian Islands ended the latter part of March 1933. Nearly 60,000 fleas, collected from 19,755 rats, were classified. Twenty percent of the rats were *Rattus hawaiiensis*, which was formerly believed to be nearly extinct.

The unknown member of the *Xenopsylla* family, whose presence was noted last year, was identified as a new species by Dr. Karl Jordan and named *Xenopsylla hawaiiensis*. This is evidently the plague-transmitting agent responsible for the existence of the endemic type of rural infection found in the Hawaiian Islands.

*Xenopsylla cheopis* were encountered in all regions where plague has existed, but they were found in large numbers only on rats caught inside or near buildings. They were as rare on field rats as *X. hawaiiensis* were on building rats. In the vicinities of Honolulu and Hilo, where plague formerly existed but disappeared in a few years without endemic foci being established, *X. cheopis* were very prevalent, while *X. hawaiiensis* were rarely found.

## PSITTACOSIS

In October 1932, research activities on psittacosis were resumed by the United States Public Health Service under the direction of Senior Surg. H. E. Hasseltine. A well-equipped laboratory building was made available for this purpose by the Pasadena (Calif.) Department of Health, which also cooperated in every way to further the work. Actual operations were started on December 20, 1932. During the remainder of the fiscal year, 464 psittacine birds were autopsied for psittacosis. There were 37 cases of human psittacosis, with 9 deaths, reported in the United States during the fiscal year.

## ROCKY MOUNTAIN SPOTTED FEVER

The study of Rocky Mountain spotted fever and other tick-borne diseases of the western United States being conducted at the Hamilton (Mont.) field station is under the direction of Special Expert R. R. Parker.

The construction of the addition to this laboratory, authorized by the Seventy-first Congress, was begun in April. The additional space thus to be provided is badly needed to accommodate in part the rapidly expanding activities of the station.

*Vaccine.*—A total of 205 liters of the Public Health Service vaccine for the prevention of Rocky Mountain spotted fever was manufactured for the season of 1933. Of this supply, 125 liters were suitable for use, an increase of 52 liters, or approximately 75 percent, over the net supply for 1932. The net amount produced has been increased 3,600 percent since 1926, the first year in which distribution was attempted.

The demand for this vaccine continues to increase. The entire net output of about 125 liters for 1933 had been distributed before the end of the fiscal year. As usual, the heaviest call has been from the Rocky Mountain States where, for epidemiological reasons, it can be used to the greatest advantage. The two local areas of greatest demand are the Bitterroot Valley section of western Montana and Harney County, Oreg. This is the first year that there has been any considerable demand from the areas in the eastern States in which the disease is endemic.

*Experimental studies.*—Studies of the occurrence of spotted fever virus in the rabbit tick (*Haemaphysalis leporis-palustris*) in Minnesota, in conjunction with Dr. R. G. Green of the University of Minnesota Medical School, were continued during the summer of 1932. Added evidence was secured of the wide-spread occurrence of a very mild type of apparent spotted fever virus in the species of tick concerned.

Further observations of the agglutination of *proteus* X organisms by spotted fever sera have been made by Bacteriologist Gordon E. Davis. The resulting data indicate that agglutinins are seldom present in sufficient titer to be of diagnostic value before the tenth day of illness, and in a considerable percentage the highest agglutinin titer is present in sera secured during early convalescence. In some cases agglutinins for the several strains of *proteus* X used as antigen are never present in the blood in sufficient titer to be of diagnostic value. In many such cases, however, blood samples taken late in the acute course or during early convalescence show a broadened affinity for *proteus* X strains. It is possible that this phenomenon is of diagnostic significance.

Studies are being made for the purpose of determining the immunological relationships between Rocky Mountain spotted fever and typhus-like diseases. Evidence that there is an actual identity between the exanthematic typhus of Sao Paulo, Brazil, and spotted fever has been secured.

Organisms of undetermined pathogenic relationships have been isolated from *Dermacentor albipictus* from diseased game animals in Minnesota and from *D. andersoni* collected in sections in which heavy losses of cattle have been attributed to this tick.

During the spring of 1932, a domestic goat was hyperimmunized against Rocky Mountain spotted fever by means of successively increasing injections of highly potent tick virus. The antiserum of this goat was found to have marked therapeutic value for laboratory animals.

Mice have been believed to be nonsusceptible to Rocky Mountain spotted fever. Experiments by Assistant Bacteriologist William L. Jellison have proved the contrary in the case of mice belonging to the

genera *Microtus* and *Peromyscus*. Species of *Microtus* particularly are highly susceptible. This observation is of importance in relation to the transmission of spotted fever by *D. variabilis* in sections east of the Rocky Mountains.

*Tick parasite studies.*—The research studies relating to the possible control of the Rocky Mountain spotted fever tick *D. andersoni* by means of parasites have been continued under the immediate supervision of Entomologist R. A. Cooley. For several years millions of parasites have been released during the late spring and early summer on the assumption that it was necessary that they be liberated during the period that the nymphal ticks were present in greatest abundance. It has been ascertained, however, that under Rocky Mountain conditions it is doubtful that the developing parasite can successfully pass the winter in engorged nymphal ticks, but that, on the other hand, the parasites also attack the engorging larvae and that the eggs deposited within the latter remain latent in the resulting hibernating unfed nymph and do not develop until the nymphs ingest blood the following spring. It appears likely that this phenomenon of latency affords a natural means for carrying the parasite over the winter. During the summer of 1932, therefore, parasites were released in various localities in western Montana; near Boise, Idaho; near Burns, Oreg.; and in Conejos Canyon, Colo. Unfortunately, curtailment of funds during 1933 has made it impossible to check the results of these releases except in western Montana. In this area, however, very satisfactory findings have been made. The real test, however, will be whether parasites can be recovered in 1934.

*Epidemiology.*—There has been a marked increase in the prevalence of Rocky Mountain spotted fever in Wyoming during the spring of 1933. A less marked increase has occurred in California, Nevada, Colorado, and Washington. Incidence has decreased in Montana, Oregon, Idaho, Utah, and South Dakota. In all States except Colorado the case fatality rate has been slightly lower.

The 1933 case reports and late 1932 reports indicate new areas of infection in the States of Montana, Colorado, Oregon, Washington, Arizona, and New Mexico, and infection has been reported from Iowa for the first time.

Additional evidence has been secured of the occurrence of second infections.

#### TULARAEMIA

In connection with studies carried on by Bacteriologist Gordon E. Davis, domestic rabbits have been found a useful adjunct to guinea pigs for comparing the virulence of different strains of *Bacterium tularense*.

The occurrence of very mild strains of *Bact. tularense* in nature has been demonstrated.

The following experimental results in tularaemia transmission by ticks and insects have been secured by Associate Entomologist C. B. Philip:

The excreta of tularaemia-infected ticks have been shown to retain infectiousness for a period of 20 days.



## CHILD HYGIENE INVESTIGATIONS

The activities of the Office of Child Hygiene Investigations continued during the year under the direction of Acting Asst. Surg. E. Blanche Sterling.

## STUDIES IN VISION, HEARING, PHYSICAL STATUS, GROWTH, AND DEVELOPMENT IN SCHOOL CHILDREN

*Vision.*—During the year tabulations of the data on the vision of school children were completed. The purpose of this study is to determine the changes, if any, in the eyes of rapidly growing children who are constantly subjecting their eyes to more intensive use as school life progresses. The degree of change, its direction, and the length of time apparently necessary to bring about a definite degree of change have all been especially studied.

*Hearing.*—Steady progress during the fiscal year was made on the intensive study of the hearing of school children. This investigation considers not only incidence and degree of hearing defects, but possible causative factors which might furnish a basis for determining preventive measures in relation to loss of hearing.

*The physical status, growth, and development of school children.*—A study of the "Seasonal variation of average growth in weight of elementary school children" (Pub. Health Rept., Mar. 3, 1933) was completed and published.

Statistical analysis of weights of about 3,000 school children obtained in May 1933, compared with the average weights for age and sex obtained during the years 1923-28, is being made in an attempt to determine the effect of the economic crisis upon the growth in weight of school children.

## THE MENTAL STATUS OF CHILDREN OF VARIOUS TYPES OF BIRTH

This study involves for each child an investigation of the family history, significant experiences, home environment, developmental history, medical history, personality traits, behavior record, school life experiences, and the obstetrical history of the mother. When these factors are correlated with the type of birth, some light may be shed on the effect of obstetrical procedures upon the mental status of the child.

## STUDIES IN DENTAL CARIES

Two studies relating to dental caries are now in progress. One concerns the relationship, if any, of dental caries to diet and climate. The data used in this study were obtained from oral examinations of over 8,000 Indian school children living under varying climatic conditions and Indian tribal habits. The second study relates to the prevalence of dental decay among Negro and white children of the same locality.

## MATERNAL, FETAL, AND NEONATAL MORTALITY AMONG INDIANS

In cooperation with the medical division of the Office of Indian Affairs a study was made of 1,815 American Indian women receiving obstetrical care in hospitals. (Pub. Health Rept., May 19, 1933.)

## MILK INVESTIGATIONS

The activities of this office were carried on under the direction of Sanitary Engineer Leslie C. Frank.

*The bactericidal treatment of milk containers and equipment.*—The thermal- and chlorine-resistance characteristics of the criterion organism selected last year have been intensively studied in the laboratory.

*Thermal resistance of criterion organism.*—The resistance of strain 11-B to heat has been determined in two ways: In the first method it was necessary to find the *thermal death points* (i.e., the minimum time required to kill the most resistant individual at different temperatures) of approximately 200 to 500 organisms per cc in milk and in water.

The thermal death points of strain 11-B in milk were found to range from 50 minutes at 140° F. to 1.5 minutes at 160° F., and in water from 15 minutes at 140° F. to 0.8 minute at 160° F. These figures for strain 11-B compare with the following reported by Park for *B. tuberculosis* in milk; 15 minutes at 140° F., and 0.4 minute at 160° F. Strain 11-B in water is, therefore, a suitable criterion of heat sterilization of *B. tuberculosis* and all less resistant pathogens in milk.

In the second method the *thermal percentage survival* of different concentrations of test organisms was determined after different periods of exposure to different temperatures in water and in milk. This method is superior for routine bactericidal efficiency tests, because it is less subject to the judgment of the investigator and to the "skip" results inherent in the method of determining the last survivor.

The thermal percentage survival tests indicate that a 99.99 percent reduction of approximately 1,000,000 criterion organisms per cc in water is obtained in 24 minutes at 140° F. and 0.6 minute at 160° F.

*Chlorine resistance of criterion organism.*—Resistance of strain 11-B to chlorine has also been determined in two ways. In the first method it was necessary to find the minimum residual concentration of chlorine gas in distilled water which is lethal in 30 seconds to strain 11-B in concentrations of approximately 300 per cc, in order to compare its *chlorine death point* with the death points of several hundred other strains, including milk pathogens, tested by Tonney. The criterion organism usually survives 0.19 p.p.m., sometimes as high as 0.27 p.p.m., and is therefore more chlorine resistant than most of the pathogens tested by Tonney.

Since this method produces the objectionable "skip" results inherent in determining the last survivor, the *percentage survival* of approximately 1,000,000 organisms per cc has been determined after different periods of exposure for 6 hypochlorites and 4 chloramine-T's. Tremendous differences in bactericidal efficiency were found. In the absence of organic matter all hypochlorites produce a 99.99 percent reduction of 1,000,000 test organisms in 2 minutes in initial concentrations of 1 to 8 p.p.m., while chloramine-T's require from 25 to 800 p.p.m.

*Proposed new field test for chlorine.*—Attempts were made to adapt the starch-iodide test to field use by combining all the reagents in a single solution. A test solution was developed which produced a sharp-end point, gave accurate results for chlorine concentrations ranging from 10 p.p.m. to 100 p.p.m., and which can be kept in the

refrigerator for 3 months without losing more than 2 percent of its chlorine demand.

*Tests to determine chlorine concentrations required in the germicidal treatment of milk coolers.*—Tests were made to determine the number of p.p.m. of chlorine for different commercial chlorine preparations which are required to produce a 99.99 percent reduction of the criterion culture of *B. coli communior* upon a commercial milk cooler by means of a 2-minute rinse with the chlorine solution.

The work has not yet been completed, but it has been roughly determined that the number of p.p.m. of available chlorine required varies greatly with the presence or absence of detergent substances, with the source of chlorine, and possibly with the hardness and hydrogen-ion concentration of the rinse water.

*Studies of pasteurization and pasteurization equipment.*—Studies were begun to determine the time and temperature combinations required to produce a 99.99 percent reduction of the test organism 11-B when treated in full scale pasteurization equipment. This work has not proceeded sufficiently far as yet to justify a statement of results.

*Studies to determine the proper treatment of udders prior to milking.*—Experiments were conducted to determine the relative effectiveness of washing udders with plain water, with soap and water, and with a chlorine solution. It was concluded that wiping contaminated udders with a 100 p.p.m. chlorine solution for 20 to 30 seconds will remove over 95 percent of a heavy contamination of a test culture of *B. coli communior* organisms, whereas simply washing with plain water or with soap and water will remove less than 30 percent of the test organisms in the same time. It requires a prohibitive washing period per udder in order to produce with plain-water washing a result approximately the equivalent of a chlorine wipe.

*A survey of milk-borne disease outbreaks for the year 1932.*—During the year 1932 the following outbreaks of milk-borne disease were reported to the Office of Milk Investigations by the State and city health authorities: Typhoid fever, 23; septic sore throat 3; scarlet fever, 6; miscellaneous, 1; total, 33.

#### STUDIES OF PUBLIC HEALTH METHODS

The Office of Studies of Public Health Methods has continued under the direction of Surg. Joseph W. Mountin. The dual purpose has been pursued, as heretofore; (1) to determine the effectiveness and economy of public health procedures in relation to the needs of the people; and (2) by means of a consultation service to transmit the results of investigations and observations to local health departments.

In order to determine the effectiveness and economy of prevailing public health practices it was deemed necessary to study a group of individuals receiving one or more of the various services supplied by local health departments.

Brunswick and Greenville Counties, Va., were selected because the health organization and public health problems there were thought to be typical of a large section of the United States. The study is being done in cooperation with the Office of Rural Sanitation of the Division of Domestic Quarantine and with the State and local health authorities.

The successive steps in the study were: (1) General social and health survey of the county; (2) study of health problems in a random sample of families selected from the population; (3) case study of the persons served by individual workers of the county health department.

This general plan of study is being extended to other counties in order to observe the work of small county health departments operating under different plans of administration. Detailed records are being kept on a large series of individual cases and family groups to determine the effect of different services performed by the health department.

An appraisal of public health service in Tennessee was made in collaboration with Dr. Allen Freeman and Dr. H. S. Mustard, of the department of public health administration of the Johns Hopkins School of Hygiene. The public health administration in the State of New Hampshire was studied for the Brookings Institution as a part of their general survey of the State government. A special survey of public health administration in Delaware County, Pa., was made at the request of the various agencies operating in the county.

#### STATISTICAL INVESTIGATIONS

The office of statistical investigations continued under the direction of Senior Statistician Selwyn D. Collins, with Edgar Sydenstricker, W. H. Frost, and Lowell J. Reed, acting as consultants in various phases of the work.

#### THE DEPRESSION AND HEALTH

For several years this office has obtained provisional mortality data from State health departments as a current index of the Nation's health. Mortality has been decreasing in almost every State. However, mortality in the general population does not truly reflect all the unfavorable factors in the people's health. No change in mortality would be expected in that part of the population that was still employed; the health of the unemployed is the real matter to be considered and sickness is a better index of health than mortality.

Information on sickness and mortality in a group of families was collected by house-to-house canvass. Reasonably accurate income and unemployment estimates were obtained for a 4-year period. The sickness record was limited to the 3 months prior to the canvass. The causes of all illness were recorded, together with the duration, calls to a physician, days of bedside nursing, nurses' visits, and days in a hospital. The 4-year employment history and the 3-month illness record permits the comparison of families whose heads have been unemployed for 1, 2, 3, and 4 years with those not affected by unemployment.

About 1,000 families were canvassed in each of 10 localities, including 8 large cities and 2 groups of villages. Communities were selected that had been hard hit by the depression, and within the city the districts with the most unemployment and relief work were surveyed, except that slum areas where the "chronically poor" would be found in large numbers, were omitted. Within the selected sections every family was included, both employed and unemployed, and welfare and nonwelfare.



Preliminary results indicate higher sickness rates among the poor, particularly in the case of the more serious illnesses that caused inability to work or that confined the patient to bed. It also appears that those families moderately comfortable in 1929 but who had been poor for 2 to 3 years had more sickness than those who had only recently become unemployed and poor, and those now poor who were formerly moderately comfortable reported more sickness than those who had been poor the whole 4-year period.

The study of the effect of the depression on health is being made in cooperation with the Milbank Memorial Fund. Consultant G. St. J. Perrott, of the Milbank Fund, is in charge of the work.

#### RESPIRATORY STUDIES

Two papers on this subject were published (Pub. Health Rept., Sept. 2 and Nov. 11, 1932), and two other reports are in proof. These studies complete the analysis of the extensive data collected after the influenza epidemic of 1928-29.

#### MORBIDITY STUDIES

A paper (Pub. Health Rept., Mar. 24, 1933) on the causes of illness in 9,000 families in 18 States was published. This is the first of a series giving the results of the morbidity study made in cooperation with the committee on the costs of medical care.

The field work of a morbidity study in New York State has been completed and part of the tabulating has been done. Data from Cattaraugus County include a 3-year record of both acute and chronic illnesses in a rural group of about 5,000 persons. Tabulations in progress will show not only the prevalence of chronic conditions, such as rheumatism and heart and kidney diseases, but will indicate the amount of disability and the extent to which doctors were consulted for these conditions during the 3-year period.

Papers were published on an epidemic of dysentery-like disease in the surveyed part of Cattaraugus County (Pub. Health Rept., July 1, 1933) and on whooping cough in Hagerstown, Md. (Quarterly Bulletin, Milbank Memorial Fund, Oct. 1932).

#### CURRENT PREVALENCE OF DISEASE

The 4-week reviews of the prevalence of diseases have been continued throughout the year. These summaries point out significant changes in the case reports received weekly by telegraph from the States as compared with preceding periods and previous years.

#### STREAM POLLUTION INVESTIGATIONS

Research studies in stream pollution and water purification have been continued at the headquarters station at Cincinnati, Ohio, under the direction of Sanitary Eng. J. K. Hoskins. To avoid, so far as practicable, diverting attention of the scientific personnel from intensive research study, an administrative change was instituted at the beginning of the fiscal year whereby cooperative activities with the States and other governmental agencies in matters pertaining to stream sanitation were transferred to the division of domestic quarantine.

During the year publications recording the conclusions derived from field and laboratory studies undertaken during recent years were com-

pleted (Pub. Health Rept., Apr. 14, 1933) and studies of other problems of practical concern to the progress of stream improvement were inaugurated. Also the field study of the pollution and natural purification of the Ohio River has reached a stopping place for the time being with the publication of the results of a resurvey of a section of the river between Cincinnati and Louisville (Pub. Health Bull. No. 204), undertaken to indicate the nature and extent of changes in the sanitary condition of these waters since the original survey in 1914. Likewise the experimental studies of natural purification of polluted waters are being rounded out by articles in the series of papers on this subject discussing the selection of bacteriological dilution waters (Pub. Health Rept., June 16, 1933), the determination of dissolved oxygen in the presence of organic matter, hypochlorites, and sulphite wastes (Ind. and Eng. Chem., Anal. Ed., 4:59-64, 1932), and the so-called "catalytic" effect of iron and other salts on the rate of oxidation (Jour. Am. Chem. Soc., 55:2012-2024, 1933). With the termination of these phases of stream study, work has been undertaken on two principal lines of research in connection with: (1) The elucidation of natural reactions occurring during the process of oxidation of organic matter in polluted streams; and (2) factors that interfere with the efficient functioning of biological oxidation processes of sewage treatment.

#### STUDY OF STREAM OXIDATION

A statistical and experimental study of stream oxidation phenomena has the following immediate objectives: (1) An analysis of extensive data bearing on oxidation in the Illinois River, and (2) an experimental determination of the rates of atmospheric reaeration of streams of deaerated water flowing through an artificial channel under various conditions of depth, velocity, and temperature.

Increasing numbers of our larger municipalities are finding it necessary to treat their sewage and industrial wastes in order to alleviate excessive stream pollution. Certain lapses occur in the efficiency of the activated sludge method of sewage treatment, which is in wide use both in this country and abroad, caused by poor settlement or bulking of the sludge in the aerated sewage-sludge mixture. Because of its widespread occurrence and difficulty of control, bulking affects detrimentally the efficiency of purification and cost of operation of many large plants.

The factors responsible for sludge bulking, whether biological, chemical, or physical, are little understood. The studies of sewage treatment being undertaken, therefore, have as their objective some contribution to the knowledge of the causes of this unfavorable condition and possible suggestions for its alleviation or control.

During the progress of these studies it has been found necessary to devise new analytical procedures for the evaluation of changes in the sewage brought about as it proceeds through the various stages of treatment.

*Coeur d'Alene River and Lake lead-pollution study.*—A study of the extent of lead contributed by mining wastes to the waters of Coeur d'Alene Lake through the Coeur d'Alene River in Idaho has been completed in cooperation with the Idaho State Department of Public Welfare. A comprehensive report was submitted to the State Legislative commission, presenting the results of analyses of over 150 samples of lake and river waters.



[To be inserted in the Annual Report of the Surgeon General of the Public Health Service for the fiscal year 1933, between pp. 32 and 33]

## INDUSTRIAL HYGIENE AND SANITATION

Studies of industrial hygiene and sanitation were under the direction of Senior Surg. J. P. Leake until January 1933, when Surg. R. R. Sayers was placed in charge.

*Health of workers in the dusty trades.*—Reports of studies in coal, textile, silver polishing, and municipal dust are being published as Public Health Bulletin 208. Additional papers were prepared in regard to talc and slate (Jour. Ind. Hyg., March 1933), marble and granite quarrying industries. A further study is in progress in regard to the effect of the dust of anthracite coal mines on the health of the workers.

*Size of industrial dusts.*—A study of size-frequency of industrial dusts was undertaken to determine the adequacy of present dust sampling methods (P.H.R., Aug. 11, 1933).

*Air abrasive blasting.*—This study (Jour. Ind. Hyg., July 1933) showed for certain abrasives the average dust concentration to which the workers were exposed for different types of equipment.

*Lead hazard in a storage battery plant.*—This study (P.H.B. No. 205) included a plant survey, a determination of the amount of lead dust and fumes in the air, a record of employment and disabling illness (especially compensation cases of plumbism), physical examinations, and blood and urine analyses. Except for prolonged exposure, it appeared that the limit of safety under the conditions studied was an atmospheric concentration of lead dust or lead fumes of less than 1.5 mg per 10 cubic meters of air.

*Health hazards of radium dial painting.*—This investigation (Jour. Ind. Hyg., Sept.-Nov. 1933) showed a slight accumulation of radium in the body of workers, including those not employed in this industry before 1927.

*Osmic acid poisoning.*—Using the facilities available through cooperation with the United States Bureau of Standards, a series of experiments was made to determine the toxicity of certain chemicals, particularly the hazard resulting from osmic tetroxide (Jour. Ind. Hyg., May 1933).

*Comparative pollution study.*—This study relates to the condition of the air in the average American city as to the presence of soot, ash, sulphur, lead, and carbon monoxide. The field work in 14 cities was completed during the year and the extensive data are being analyzed. Report of a study of the loss of light in Baltimore due to smoke was published (P.H.R., Feb. 3, 1933).

*Lead in air of streets and industrial establishments.*—A further study was made on the amount of lead dust and fumes normally present in the air of city streets, automobile repair shops, and a wide variety of non-lead-using industrial establishments. Minimal amounts of lead were found.

*Sickness among industrial employees.*—For the twelfth consecutive year, reports of cases of sickness and nonindustrial accidents were received from a group of about 35 companies. A point of particular interest is the low incidence in 1932. During the past 3 years, in fact, the rates for this representative group of workers have been definitely lower than during the 3 preceding years.

Sickness records of several public utilities showed wide differences in the indicated frequency and nature of disabling illness according to the plan of sickness insurance in force (P.H.R., Sept. 8, 1933).

*Mortality of coal miners.*—A study of the mortality of coal miners (P.H.B. No. 210) shows an excess rate from respiratory diseases, especially among anthracite miners.

*Impairments in relation to weight.*—In connection with the analysis of records of health examinations in cooperation with the Milbank Memorial Fund, a study (P.H.R. Aug. 4, 1932) was made of the prevalence of physical impairments among persons of different weights for a given height and age.

*Natural illumination in schools, factories, hospitals, etc.*—This study was continued.

*High temperature and humidity in a textile plant.*—A picture is given as to the actual environmental conditions in a cotton plant in a southern city and a record of the sickness occurring among the workers (P.H.B. No. 207).

*The industrial environment.*—The value of the sanitary survey in revealing the presence of health hazards is pointed out and the need for a careful occupational and job analysis, especially in any study of hazards associated with particular activities, is shown (P.H.R., Nov. 3, 1933).

*Health of women in industry.*—This study was continued during the year and the data are being analyzed.

*Children in hazardous occupations.*—Certain census tabulations were analyzed showing the percentage of children under 18 in occupations that were classified as hazardous.

*Cooperation with the United States Bureau of Mines.*—The detail of Surg. R. R. Sayers to the Bureau of Mines as Chief of the Health and Safety Branch ended January 1933. For the next 6 months this health work was carried out under the direction of Surg. Albert E. Russell. On June 30, the Health Division was abolished by the Bureau of Mines because of the economy program, bringing to an end a long period of cooperation, characterized by the Director of the Bureau as "A perfect example of extensive cooperation by two governmental agencies." During the 14 years that this cooperative research has been in force, a substantial amount of research work has been done with reference to a large number of problems in industrial hygiene.

*Industrial sanitation code.*—A revision of the proposed industrial sanitation code was submitted to the committee of the American Standards Association. Suggested changes are now under consideration before the final adoption of the code.

*Cooperation with United States Bureau of Standards.*—As in the preceding year, Passed Asst. Surg. F. R. Brunot was detailed to the Bureau of Standards for the purpose of cooperating in the care of injuries and for the laboratory investigation of health hazards in industry.

## NATIONAL INSTITUTE OF HEALTH

## GENERAL

The administration of the National Institute of Health continued under the supervision of Dir. George W. McCoy and Asst. Dir. R. E. Dyer.

*Publications.*—Three bulletins and a number of scientific papers were published during the year.

*Library.*—This unit of the Institute has continued under the immediate supervision of Miss Carrie Myers. During the fiscal year the library acquired 501 volumes, making a total of 16,071 now on the shelves.

## DIVISION OF PATHOLOGY AND BACTERIOLOGY

*Typhus-Rocky Mountain spotted fever.*—The investigations of typhus and Rocky Mountain spotted fever were continued by Surg. R. E. Dyer and Passed Asst. Surgs. A. Rumreich and L. F. Badger, and Asst. Surg. W. G. Workman. In the autumn of 1932 Surgeon Dyer and Assistant Surgeon Workman contracted typhus in the course of the investigations.

In continuation of investigations on the relationship of rats and fleas to typhus fever a survey of the rodent population and a collection of rat parasites was undertaken at Savannah, Ga., and coincidentally a record was kept of the occurrence of typhus in the human population of that city. Rats were systematically trapped in Savannah throughout the fiscal year, combed for parasites, and identification of the parasites made. Records of the location where rats were trapped were checked with the location of cases of typhus occurring in the human population. During the year 5,639 rats were trapped and 112,444 parasites collected. Ninety-six cases of typhus were reported in the city.

The virus of endemic typhus was recovered from the brain of a wild rat trapped in Savannah at a location where human cases of endemic typhus had occurred. It was found that, in addition to *Xenopsylla cheopis* and *Ceratophyllus fasciatus*, *Xenopsylla astia* was an efficient vector of endemic typhus under experimental conditions.

A study of typhus-control measures was begun at Dothan and Enterprise, Ala. Measures of rodent control are being practiced with a view to determining whether the procedures employed are effective in reducing typhus incidence among the population.

Vaccines against typhus have been prepared from typhus-infected fleas, and so far it has been found possible to protect about 50 percent of the experimental animals.

Rocky Mountain spotted fever infection in ticks in nature was demonstrated by finding the virus in ticks secured in northern Virginia.

It was found possible to infect young dogs and lambs with spotted-fever virus; whether they serve as distributors of the infection under natural conditions remains to be determined. It was shown that spotted fever is not limited to the United States. A close immunological relationship was demonstrated to exist between spotted fever and the *fièvre boutonneuse* of the Mediterranean littoral. A disease described in Brazil in 1929 under the name of "exanthematic typhus of Sao Paulo" was found to be identical with spotted fever and of a virulence comparable with that seen in the Bitter Root Valley of Montana.

*Trachoma*.—Studies on the etiology of trachoma were continued by Senior Bacteriologist Ida A. Bengtson. Granular conjunctivitis was studied in 2 series of *Macacus rhesus* monkeys, in the one series the condition having been induced by direct transfer of secretions from trachomatous eyes of patients in Rolla, Mo., and in the other by inoculation with cultures of *Bacterium granulosis*. A vaccine made from *Bacterium granulosis* failed to protect the animals against either condition.

*Seasonal acute conjunctivitis occurring in the Southern States*.—A study was made by Senior Bacteriologist Bengtson of an acute conjunctivitis, popularly known as "gnat sore eyes", occurring during the summer months in Georgia and other States in the South. The condition, sometimes in virulent form, attacks young children in particular, though adults also are affected. The disease is of importance, because in some sections it occasions more absence from school than any other cause. A study was made of 50 cases at Bainbridge, Ga. In this group the Koch-Weeks bacillus was isolated in 60 percent of cases, the Morax-Axenfeld bacillus in 18 percent, and a pleomorphic streptococcus in 24 percent.

*Tularaemia*.—Investigations under Medical Dir. Edward Francis demonstrated marked resistance of cultures of *Bacterium tularense* to alternate freezing and thawing. However, continuous freezing of tularaemia rabbits at  $-15^{\circ}$  C. resulted in the survival of virulent infection in the brain and spinal cord for  $1\frac{1}{2}$  years, in the spleen and muscle 1 year, in the liver 11 months, and in bone marrow 8 months, thus demonstrating the danger to man of handling infected rabbits kept continuously frozen for long periods.

*Studies of bacterial variants or mutants*.—Studies upon bacterial variants or mutants have been continued by Surg. R. R. Spencer. As has been the experience of previous investigators, changes have been produced in bacterial morphology and behavior which are believed due to genuine mutations.

The chief effort during the year has been toward the development of a technique which excludes contaminating organisms and at the same time provides an opportunity for the study of the causes of variants and mutants among bacterial species.

*Bacteriophage*.—Two lines of study by Senior Bacteriologist Alice C. Evans on antistreptococcus bacteriophage are in progress. Immunization experiments have shown that rabbits may be protected against lethal doses of streptococci by repeated injections with lysed cultures.

The grouping of 240 hemolytic streptococci from a great variety of disease sources, from many parts of the world, according to sensitiveness to 3 races of bacteriophage gives promise that relationships may be revealed which may be useful in tracing the source of epidemics.

*Immunity*.—Surg. W. T. Harrison, in collaboration with Surg. Charles Armstrong, has made laboratory observations which show that animals previously immunized to one disease were more resistant to later infection with entirely unrelated diseases than were animals not so previously immunized.

*Studies of nutritional diseases*.—Studies on nutritional diseases continued to be related primarily to the problems presented by pellagra. They were carried on under the direction of Surg. G. A. Wheeler assisted by Passed Asst. Surg. W. H. Sebrell.

*Vitamin studies*.—A study of the adsorption products between the vitamin B complex and fuller's earth was begun by Associate Bio-

chemist Victor Birkner. Adsorbates of this type varying in chemical composition and physiological activity have long played a part as important intermediates in procedures for the isolation of vitamin B fractions.

*Pathology.*—Work in the section of pathology has been conducted by Surg. R. D. Lillie, Asst. Surg. J. G. Pasternack, and Asst. Surg. V. A. Gotcher. The histologic diagnostic service to marine hospitals and other agencies has been continued, over 2,000 specimens being examined and reports submitted thereon. In addition to this diagnostic work, specimens from over 1,200 experimental animals were examined histologically and reports submitted.

Reports have been prepared and published or are ready for publication on the pathologic histology of psittacosis (N.I.H. Bull. 161), the histopathology of some neurotoxic phenol esters (N.I.H. Bull. 160), Romanowsky staining with buffered solutions, experimental meningitis in rabbits, a metastasizing chondrosarcoma of the mandible, paraffin imbedding in vacuo, multiple branchiogenic acanthoma, fibroma of the falx cerebri in the guinea pig, and the pathology of experimental blacktongue and "yellow liver" in dogs.

There follows a tabulation of specimens examined during the fiscal year:

A. Tissue specimens of human origin.....	2, 078
B. Pathology of experimental diseases.....	1, 232
C. Miscellaneous preparations.....	66
Total histopathology.....	3, 376
Blood and spinal fluid for Wassermann and Kahn test.....	17, 218
Blood.....	2, 931
Cultures.....	146
Water.....	53
Other specimens.....	130
Total miscellaneous.....	20, 478

#### SPECIAL STUDIES ON PROPHYLACTIC AND THERAPEUTIC AGENTS

*Standardization of gas gangrene antitoxins.*—A provisional unit for determining the potency of *Vibrio septique* antitoxin was established by Senior Bacteriologist Ida A. Bengtson, and has been made use of in testing the serums received from various biological firms.

*Hemolytic streptococcus studies.*—Studies having to do with the toxicogenic and antigenic properties of hemolytic streptococci from various diseases have been continued by Surg. M. V. Veldee, with the assistance of Passed Asst. Surg. G. L. Dunnahoo.

A practical method for the manufacture of a scarlet-fever prophylactic (streptococcus toxoid) has been completed and the resulting material employed for the immunization of over 1,700 susceptible persons. Sufficient toxoid may be given in 3 doses to induce immunity in over 80 percent of those tested.

The toxicogenic properties of a considerable number of strains from erysipelas sources have been studied, as well as the antitoxic properties of various commercial erysipelas antitoxins.

*Staphylococcus studies.*—Surg. Floyd C. Turner has undertaken studies looking toward the development of standards by which to gauge the safety and efficacy of preparations falling in the group of biologic products and intended for use in the prevention and treatment of conditions due to staphylococci.



*Diphtheria prophylactics.*—Studies on alum precipitated diphtheria toxoid carried on by Surg. W. T. Harrison have shown that 1 dose of 1.0 cc is at least as effective as 2 doses of 1.0 cc each of original unmodified toxoid. Diphtheria toxoid is rapidly replacing other prophylactics.

*Meningococcus meningitis.*—It has been shown by Senior Bacteriologist Sara E. Branham that a fatal meningitis can be produced in rabbits by intracisternal injection of sufficiently virulent strains of meningococci. Guinea pigs have proved to be more susceptible to meningococci than rabbits. Clinical and histopathological pictures essentially identical with those produced by intracisternal injections of living virulent cultures were produced in guinea pigs by similar injections of filtered suspensions, by heat-killed suspensions as well, and by Berkefeld filtrates of broth cultures of some strains. In both guinea pigs and rabbits intoxication seemed to play an important role.

*Post vaccination complications.*—Studies by Surg. Charles Armstrong have resulted in the collection of 92 cases of post-vaccination encephalitis in the United States during the past 11 years, 13 of which occurred in 1929, 26 in 1930, 15 in 1931, and 6 in 1932. Laboratory studies confirmed evidence previously reported indicating that experience with various infections and antigens may render animals increasingly resistant to different diseases and toxins subsequently encountered.

Tetanus as a complication of vaccination has continued to decline, but one case having been reported for the year.

*Arsenicals.*—Studies by Asst. Pharmacologist T. F. Probey on the therapeutic activity of neoarsphenamine in experimental syphilis in rabbits have been continued. The studies indicate that the trypanocidal activity test for the control of the commercial neoarsphenamines is not a safe guide as to therapeutic activity.

#### DIVISION OF PHARMACOLOGY

The following work was pursued by the division of pharmacology of the National Institute of Health under the direction of Pharmacologist Director Carl Voegtlin:

(a) *The hydrogen ion concentration of normal and malignant tissues in the living animal.*—The hydrogen ion concentration (acidity) of all living organisms is an important factor which controls many important biochemical reactions, such as the action of proteolytic, glycolytic, and other enzymes; oxidation-reduction; and the state of tissue colloids. The work of Warburg and others has shown that cancerous tissue removed from the animal body has an unusual ability for converting glucose into lactic acid. Experiments were therefore carried out to determine whether it is possible to increase the acidity of malignant tumors in the living animal by the administration of glucose and other sugars. The results obtained clearly prove that the administration of certain natural sugars, more particularly glucose, fructose and mannose, causes a gradual increase in acidity of the malignant tissue 500 to 800 percent. The acidity of such normal tissues as the skeletal muscle is but little affected. These findings suggest that the biochemical reaction involved may have a relation to the death of cancer cells and the death of adjoining normal tissue cells. Work along this line is under way.

(b) *Influence of the oxygen tension on protein synthesis in tumors and normal tissues.*—It was demonstrated that under increased oxygen tension protein is built up from normal and malignant tissue cleavage products. Some of the results indicate that different tissues may have different optima of oxygen tension and acidity for protein synthesis.

(c) *Tissue cultures.*—The new method for simultaneous control of the oxygen and carbon dioxide tensions and the hydrogen ion concentration of tissue cultures has been applied to the cultivation of the Walker 256 mammary carcinoma. The results indicate that the oxygen tension of the culture exerts a pronounced influence on the growth of these malignant cells in vitro. A comparison of rat and horse serum in the culture medium indicates that the former favors digestion of the medium, and apparently also the growth of malignant cells.

(d) *Chemistry of cell division.*—Studies were made to discover the optimum range of temperature for the various phases of the cell division process in *Amoeba proteus*. In view of the apparent importance of lactic acid production in cancerous tissue, an investigation was conducted on the effect of this substance on cell division of *Amoeba proteus*. Inhibition of cytoplasmic division has been observed. This effect appears to be rather specific, and not merely a function of hydrogen ion concentration.

(e) *Chemotherapy.*—Several attempts have been made to influence the growth rate of malignant tumors in animals by treatment with certain chemicals. The results have mostly been negative, though some chemicals seem to retard tumor growth appreciably.

*The pharmacology of phenol esters.*—Continuing the work of the preceding year on the relation of chemical constitution to physiologic action as exemplified by certain phenol esters, the action of the phosphorous acid esters of the phenols has been studied. Unlike the specificity of the phosphoric triester of orthocresol, as distinguished from the related isomers, all the phosphorous acid esters of the phenols were found to produce the same type of extensor rigidity with combined degeneration of certain tracts in the spinal cord.

*Vitamin studies.*—A method was developed for the physiologic assay of the thermostable growth-promoting vitamin B<sub>2</sub>. The application of this, together with the method previously described for the assay of the antineuritic vitamin B<sub>1</sub>, has made it possible to effect a separation of the two vitamins by means of differential solvents.

A crystalline substance has been obtained in small amount with the aid of picrolonic acid, which is highly potent in antineuritic activity. On the basis of physiologic tests it appears to be the picrolonate of the antineuritic vitamin. Further work is being done toward increasing the yield of this substance sufficiently for chemical identification.

*Relation between arsenoxide content and toxicity of commercial arsphenamine.*—Thirty-five commercial samples of arsphenamine of recent manufacture, when tested for arsenoxide content and toxicity, showed that the high toxicity of certain products is chiefly due to their arsenoxide content.

A simple chemical test was elaborated to distinguish between arsphenamine, neorsphenamine, and sulpharsphenamine.

*Urinary antiseptics.*—Work was initiated for the purpose of discovering efficient urinary antiseptics. The relation between minimum fatal dose and antiseptic dose has been established for some drugs in clinical use (hexamine) and some chemicals which have not been used heretofore.

#### DIVISION OF CHEMISTRY

The work of the Division of Chemistry was continued under the direction of Prof. Claude S. Hudson.

*Sugar researches.*—In order to throw further light on the naturally occurring and biologically important uronic acids and their derivatives, studies were made of the oxidation of sucrose,  $\alpha$ -methyl-d-xyloside, and  $\alpha$ -methyl-d-mannoside. These and related researches, besides yielding data of value in the study of the physiological chemistry of the sugars, have also led to the discovery of new sugar derivatives and the development of methods for their isolation in pure condition.

In connection with a study of the oxidation of xylose, the 4-carbon sugar, threose, was isolated as a crystalline triacetate. This sugar has been sought by chemists and physiologists for many years in quantities sufficient for scientific studies. Studies have also been made of the sulphur compounds of certain sugars and of their oxidation compounds. The  $\gamma$  type of sugar structure is considered the precursor of the ordinary type of sugar in the animal body and studies of interest along this line were carried out.

Improved methods were developed for the preparation of mannose, arabinose, fucose, the methyl glucosides, and  $\gamma$ -methyl mannoside, which make these carbohydrates more readily available in pure condition for use by bacteriologists.

*Enzyme researches.*—As the difficulty of isolating toxins and anti-toxins, vitamins, hormones, and enzymes frequently limits their use in physiological research and in the prevention and treatment of disease, one typical active agent has been purified by processes restricted to those in which these active principles are in general stable. The objective of the work was to develop experimental technique of a type generally permissible in similar purifications. Invertase, an enzyme present in the digestive tract and in yeast, was chosen for investigation because it was readily available and because it liberated glucose and fructose from sucrose, one of the few important foodstuffs with a relatively simple chemical constitution.

After adsorbing the invertase from the highly impure yeast liquor upon the surface of colloidal lead sulphide, the solid lead sulphide-invertase complex was decomposed by a smaller volume of the untreated solution to give a filtrate of much higher potency than the original. The observation was developed into a relatively convenient method by which invertase, and perhaps eventually other similar active agents, may be greatly purified. In another research invertase was found to invert sucrose and to hydrolyze one constituent of a complex mixture of fructose derivatives in a strictly similar manner. These results are of value in enabling us to interpret the mechanism of the inversion of sucrose by the enzyme. This work also led to the discovery of a crystalline, very reactive fructose derivative—a  $\gamma$ -methyl fructoside—whose existence rendered uncertain the current chemical views of the structure of sucrose.

*Mosquito larvicides.*—Studies were made in cooperation with Surg. L. L. Williams, Jr., of larvicides which could be used for destroying mosquito eggs deposited upon grass or shrubs growing in depressions.

*Industrial hygiene.*—Chemical work required in connection with a study of air pollution in the larger cities of the United States was carried out. The studies necessitated the analysis of 315 samples of atmospheric dust from 14 different cities in the United States and 35 samples of settled dust collected in Washington, D.C.

*Analytical work.*—About 123 various analyses of miscellaneous material, 34 determinations of carbon and hydrogen, 48 methoxyl and ethoxyl determinations and 24 mineral analyses of waters were carried out; there were examined 11 arsenicals; and several toxicological examinations were made on body fluids and miscellaneous material. There was a continuation of the analytical work required in the studies of the relation of diet to pellagra.

#### DIVISION OF ZOOLOGY

Junior Nematologist M. O. Nolan remained in supervisory charge of the work of this division. The following work has been pursued:

*Bulletins.*—A bulletin was prepared for publication on the parasitic diseases of pinnipedia. The manuscript of another bulletin on the parasitic diseases of the lagomorpha (hares and rabbits) in relation to the diseases of man, is nearly completed.

*Examination of parasites for diagnosis.*—This part of the routine work of the division was continued throughout the year, and 169 specimens have been examined for various Government hospitals, State health departments, universities, and practicing physicians.

In connection with the work on typhus fever, over 100,000 ectoparasites from Savannah rats have been determined.

#### MISCELLANEOUS

During the fiscal year 7 public-health bulletins and 2 National Institute of Health bulletins were issued, and 157 scientific articles for the Public-Health Reports or for outside publication were submitted to this division for review and recommendation as to publication.

The annual meeting of the National Advisory Health Council was held on May 9, 1933, for the purpose of reviewing the work of the Public Health Service and securing the recommendations of the council regarding future activities.



## DIVISION OF DOMESTIC (INTERSTATE) QUARANTINE

In charge of Asst. Surg. Gen. C. E. WALLER

### PLAGUE-SUPPRESSIVE MEASURES IN CALIFORNIA

Plague-suppressive measures conducted in cooperation with the State authorities of California were continued in Alameda, Contra Costa, San Francisco, and San Mateo Counties.

No human case of plague was reported during the year, but rodent plague was reported in ground squirrels in San Benito County.

*Plague in ground squirrels.*—The work has been concentrated in the area around centers of population and in adjacent territory in order to maintain squirrel-free zones to prevent contact between ground squirrels and rats, thereby preventing the introduction of plague into urban centers.

The work in Alameda and Contra Costa Counties has been coordinated with that of the county authorities while in San Francisco and San Mateo Counties all squirrel-control measures have been placed in the hands of Public Health Service employees.

The field operations conducted by the Public Health Service are shown in the following tabulated statement:

Number of—	
Inspections.....	1, 331
Reinspections.....	4, 415
Acres inspected.....	263, 896
Acres reinspected.....	1, 073, 422
Acres treated.....	227, 789

*Measures taken against rats.*—This work in San Francisco consists of: (a) Trapping and examination of rats; and (b) the investigation of complaints of rat infestation of premises. The former activity is a survey to determine whether any infection exists in these rodents that would be dangerous to the public health. The latter consists of visits to and examination of premises reported rat infested, for the purpose of advising owners in regard to corrective measures. This work is conducted in cooperation with the San Francisco Department of Health under the direction of this office. No evidences of plague infection have been found in any of the rats examined. A total of 1,145 rat complaints were investigated in San Francisco.

Rodent-control work has been continued through the year by the Los Angeles Health Department. No plague infected rat has been found since June 1932.

*Public Health Service laboratory.*—The laboratory was moved on June 15, 1933, into a new building on the Marine Hospital reservation.

The activities of the laboratory have been enlarged to embrace the following: Serological and bacteriological work for other public health service stations in this district; examination of water used on interstate carriers, in national parks, and on Indian reservations; and serological work and animal inoculations for other departments of the Government.



The operations of the laboratory are shown by the following tabulations:

*Summary of laboratory operations*

	Received	Examined
Examination of rodents for plague:		
Rats from San Francisco.....	34,718	26,321
Rats from Oakland.....	1,286	1,206
Rats from fumigated ships.....	409	409
Squirrels from San Francisco.....	1	1
Serological examinations: Wassermann reactions.....		6,573
Bacteriological examinations (culture and microscopic):		
Water.....		512
Other.....		197
Miscellaneous.....		71

### TRACHOMA-PREVENTION WORK

The United States Public Health Service started a cooperative campaign against trachoma in this country in 1913. The work has continued through this period of 20 years in Kentucky, with one short interruption, for 17 years in Tennessee, and for the past 10 years in Missouri. The disease is still a serious problem among white people in certain sections of the country.

The main points in the trachoma eradication program are: (1) Case finding; (2) education in proper personal hygiene; and (3) treatment of the more severe individual cases. Of these, the most important is probably that dealing with the hygienic education of the individual patient and his family.

*Missouri.*—Field and hospital work were continued throughout the year, during which period 711 new cases of trachoma were contacted by physicians from the hospital at Rolla, of which number, 38 percent were cases already arrested, most of whom had had little or no treatment.

An experiment conducted over a period of 20 months showed no effect of a balanced diet reinforced with certain vitamins on the course of untreated trachoma. The value of copper thiosulphate intravenously is being tried, and 12 patients have finished a course of 10 intravenous injections of this chemical.

*Kentucky.*—With as large a personnel as the trachoma unit at Rolla, the number of new trachoma cases contacted in Kentucky was only 45 percent of the number seen in Missouri, owing partly to the fact that the trachoma hospital in Kentucky is removed from the main trachoma area in that State. Of 306 new cases of trachoma seen in Kentucky patients during the year 50 percent were under 29 years of age. The percentage of early cases must become less before trachoma work can slow up. Kentucky still has a trachoma problem, but a much less serious one than it had even 20 years ago. It is interesting to note that out of 4,136 pupils examined in schools, largely country schools, only 27 were seen with a condition suspicious of trachoma. The same nurse examined 4,708 people in homes that she had never been in before and found 352 suspicious of trachoma.

*Tennessee.*—The trachoma unit in this State attempts to bring special care and special training to the front door of the mountaineer suffering from trachoma. Of 312 new cases of trachoma contacted during the year, 19 percent were already arrested when first seen. The percentage of early cases, those under 29 years of age, was only

42 percent of all the new cases seen. During the year there were six field-treatment clinics held each week in the territory surrounding Gainesboro.

*Georgia.*—The cooperative work in this State ceased June 15, 1933. It is believed that the trachoma problem in Georgia will not become serious if the boards of education and the county health officers will encourage the use of astringent eye drops in the schools, as has been done during the past 2 years.

*Texas.*—A trachoma survey was finished in central east Texas, including in it the only tribe of Indians living in Texas. Only one case of trachoma was seen.

#### *Field work*

##### Field clinics:

Number of clinics held.....	559
Number of persons examined.....	18, 646
Trachoma cases seen (old trachoma).....	5, 633
New trachoma cases seen.....	1, 280
Suspicious cases seen.....	2, 559
Treatments given at clinics.....	7, 932

##### Field nurse activities:

Public talks given.....	139
People (estimated) in audiences.....	10, 182
Homes visited.....	3, 969
People examined in homes.....	7, 902
Suspicious cases in homes.....	940
Number pupils examined in schools.....	15, 706
Suspicious cases in schools.....	569
Number treatment clinics, nurse only.....	121
Number treatments by nurse.....	4, 427

#### *Dispensary and hospital relief, operations, etc.*

##### Dispensary relief:

Number examined.....	5, 671
Old cases, trachoma.....	2, 586
New cases, trachoma.....	661
Total attendance.....	5, 671
Average daily attendance of all stations.....	5. 04

##### Combined dispensary and field-clinic data: Total number of new individual trachoma cases discovered.....

1, 941

##### Hospital relief:

Hospital capacity.....	77
Cases admitted during the year (total).....	777
Number cases first admission.....	513
Days relief furnished.....	25, 867

##### Operations: Total number of operations.....

671

### PSITTACOSIS

The increasing frequency with which outbreaks of human psittacosis were occurring in different sections of the country demanded that steps be taken to curb the interstate spread of the disease.

Since it had been determined that psittacosis had become endemic in certain domestic aviaries, the Public Health Service sought further to limit the spread of the disease, and on September 28, 1932, the Acting Secretary of the Treasury promulgated an amendment to the interstate quarantine regulations prohibiting the interstate transportation of psittacine birds by common carrier, except when accompanied by a certificate of health issued by the health authority of the State of origin that to the best of his knowledge and belief the birds so certified were free from psittacosis. As most health officers were unwilling to assume such responsibility, very few certificates were

issued, and for a time interstate shipment of psittacine birds practically ceased.

The center of the parrakeet industry in the United States is located in California. Immediately following the promulgation of the interstate quarantine regulations, the California State Board of Public Health issued an order isolating all psittacine birds in the State and quarantining those aviaries known to be infected. No birds could be moved within the State without written permission of the local health officer. Rules and regulations governing the breeding and commerce in shell parrakeets were promulgated by the California State Board of Public Health, on January 28, 1933. These combined control measures of State and Federal Government apparently curbed the spread of psittacosis in the United States. More than 50,000 parrakeets have been released from California aviaries for out-of-state shipment in the past 3 months. Two cases of human psittacosis, one as yet unconfirmed, have occurred in other States, but in both instances it appeared that the birds involved had not been released by the State health authority.

#### SUPERVISION OF WATER SUPPLIES USED BY COMMON CARRIERS

The inspection and certification of water supplies used for drinking and culinary purposes on interstate carriers, under the cooperative plan between the State health departments and the Public Health Service, was continued with increasing efficiency. During 1932 only 1.6 percent of the total supplies were certified as unsuitable for use.

Assistance rendered the States in making actual inspections of water supplies was considerably reduced, only 93 supplies being inspected. A total of 3,693 certificates of inspection were prepared in the district offices and forwarded to the States for signatures of the State health officers.

The increasing completeness of the certification work is shown in the following table of percent for completed certifications.

Supply	Percent of completed certifications				
	1928	1929	1930	1931	1932
Railroad supplies.....	82	81	87.5	92.8	95.1
Vessel supplies.....	78	78	88.0	95.9	97.2
Airplane supplies.....				85.8	97.4

*Status of work by States.*—The accompanying table covering the calendar year 1932 shows the status of the work by States.

*Interstate carrier supplies for calendar year 1932*

State	Source classification				Certification status				Per- cent of sources acted upon
	Pub- lic <sup>1</sup>	Com- pany	Pri- vate <sup>2</sup>	Total	Satis- factory	Provi- sional	Prohib- ited	Action pend- ing	
Alabama.....	38	0	1	39	39	0	0	0	100
Arizona.....	13	8	7	28	24	3	0	1	93
Arkansas.....	44	4	0	48	34	12	2	0	100
California.....	67	19	11	97	71	24	2	0	100
Colorado.....	27	5	5	37	31	6	0	0	100
Connecticut.....	23	0	0	23	22	1	0	0	100
Delaware.....	9	0	0	9	9	0	0	0	100
District of Columbia.....	2	1	1	4	4	0	0	0	100
Florida.....	49	14	6	69	66	3	0	0	100
Georgia.....	51	1	3	55	38	15	2	0	100
Hawaii.....	3	0	0	3	3	0	0	0	100
Idaho.....	17	6	0	23	22	1	0	0	100
Illinois <sup>3</sup> .....	82	15	5	102	66	36	0	0	100
Indiana.....	49	2	2	53	16	37	0	0	100
Iowa.....	61	11	1	73	40	28	2	3	96
Kansas.....	32	8	2	42	66	3	5	0	100
Kentucky.....	32	13	6	51	32	16	0	3	94
Louisiana.....	35	11	3	49	43	6	0	0	100
Maine.....	42	3	0	45	42	3	0	0	100
Maryland.....	17	2	3	22	20	2	0	0	100
Massachusetts.....	50	0	0	50	49	1	0	0	100
Michigan.....	72	11	2	85	81	4	0	0	100
Minnesota.....	49	22	3	74	39	22	3	10	86
Mississippi.....	35	4	2	41	36	4	1	0	100
Missouri.....	57	6	2	65	49	15	1	0	100
Montana.....	24	9	2	35	31	4	0	0	100
Nebraska.....	30	17	0	47	10	33	4	0	100
Nevada.....	11	12	0	23	20	3	0	0	100
New Hampshire.....	17	1	0	18	15	3	0	0	100
New Jersey.....	55	5	2	62	57	0	0	5	92
New Mexico.....	10	10	2	22	22	0	0	0	100
New York.....	113	13	1	127	115	12	0	0	100
North Carolina.....	51	3	5	59	47	7	5	0	100
North Dakota.....	19	19	3	41	0	0	0	41	0
Ohio.....	68	10	2	80	64	13	3	0	100
Oklahoma.....	41	4	4	49	32	15	2	0	100
Oregon.....	34	2	1	37	32	4	1	0	100
Pennsylvania.....	137	15	4	156	113	2	0	41	74
Puerto Rico.....	1	0	0	1	0	0	1	0	100
Rhode Island.....	7	0	0	7	7	0	0	0	100
South Carolina.....	33	1	5	39	39	0	0	0	100
South Dakota.....	21	9	0	30	13	8	0	9	70
Tennessee.....	30	8	5	43	38	2	3	0	100
Texas <sup>3</sup> .....	130	51	19	200	91	107	0	2	99
Utah.....	12	5	0	17	17	0	0	0	100
Vermont.....	11	1	0	12	11	1	0	0	100
Virginia.....	53	4	5	62	62	0	0	0	100
Washington.....	41	4	3	48	43	3	2	0	100
West Virginia.....	38	10	7	55	48	6	1	0	100
Wisconsin.....	52	12	8	72	64	7	1	0	100
Wyoming.....	14	3	0	17	16	1	0	0	100
Canal Zone.....	2	0	0	2	2	0	0	0	100
Total.....	2,043	394	146	2,583	1,947	477	41	118	95.43

<sup>1</sup> The column headed "Public" includes supplies owned by municipalities as well as those used by municipalities but owned by private companies.

<sup>2</sup> "Private" supply refers to a small well or spring used only by the carrier and the person owning it.

<sup>3</sup> Certification based on watering point sanitation as well as source of supply.

## RECIPROCITY WITH CANADA

Through reciprocity with the Department of Pensions and National Health of Canada, inspection and certification of drinking and culinary water supplies used by international carriers, as well as supervision of drinking-water supply systems on vessels operating on the Great Lakes and border waters, have been continued. Twenty-four Canadian water supplies used by the United States carriers were inspected by the health authorities and certificates furnished. Sixty United States supplies used by Canadian carriers were inspected and

certified. In addition, the Canadian authorities were furnished with reports on 14 United States supplies used by the United States carriers crossing the international line.

#### SUPERVISION OF WATER SUPPLY SYSTEMS ON VESSELS

Sixty-one percent of the vessels in active service during the year were inspected and certified, an increase over the previous year.

District No. 1 was called upon to a greater extent than usual to examine plans for drinking and culinary water systems for vessels under construction and to inspect the vessels on their trial trips. Water-system plans for 19 vessels were submitted to the district offices for review and approval.

District No. 3 cooperated with the officials of the Twelfth Lighthouse District at Milwaukee in the development of a small but efficient treatment plant applicable to small vessels such as the lighthouse tenders and light ships. Treatment consists of superchlorination, filtration, and dechlorination and furnishes a safe, clear, and palatable water at all times.

A total of 1,323 laboratory examinations of water taken from the drinking-water supplies of vessels were made by the city health departments of cities on the Great Lakes and Mississippi River system; 233 vessels were inspected for the first time during the year, and 452 were reinspected.

The following table shows vessel work done during the calendar year 1932:

*Vessels for calendar year 1932*

District	Vessels on active status	Percent of total vessels in district	Certification <sup>1</sup>				Percent of district vessels certified	Percent of total vessels certified
			Permanent	Temporary	Unap-proved	Total		
1-----	651	39.4	98	275	1	374	57.4	22.6
2-----	114	6.9	109	5	0	114	100	6.9
3-----	403	24.4	369	22	0	391	97	23.6
4-----	145	8.8	116	7	17	140	96.5	8.5
5 and 6-----	339	20.5	299	12	1	312	92	18.9
Total-----	1,652	-----	991	321	19	1,331	-----	80.6

<sup>1</sup> Only the latest certificate issued on a vessel was counted in case that vessel was both temporarily and permanently certified during the year.

Of 31 cases of typhoid reported among crews or passengers on vessels during the year, only 2 occurred on vessels under the jurisdiction of the Interstate Quarantine regulations.

#### RAILWAY SANITATION

As time permitted, inspections were made of coachyards, terminals, and watering points, 233 such inspections being made during the year. The State health departments have been urged to include the inspection of these railroad properties when the water supplies are inspected.

Inspections of dining cars have been made from time to time, with special attention to the grade and source of the milk supply.



## SHELLFISH SANITATION

Assistance was given the State departments of health of Massachusetts and New Jersey in working out a process of conditioning soft clams taken from sources not entirely free from pollution but not grossly polluted; and the States of Georgia, Florida, and Texas in planning and carrying out studies of certain oyster-growing areas.

Distribution of the list of certified dealers was continued throughout the year and constituted an important factor in maintaining reasonable sanitary control. During the year 1,301 certificates issued by the producing States were approved. In order to determine the efficiency of control maintained by the producing States, 37 growing areas and 807 shucking and packing plants were inspected.

## COOPERATIVE WORK WITH STATES RELATIVE TO STREAM SANITATION

On account of the requests from States and groups of States for assistance in formulating plans for stream pollution studies, methods of procedure or assistance in correlating data, it was considered advisable to establish the Office of Stream Sanitation.

In compliance with Senate Resolution No. 44, an investigation was conducted during the months of July to September 1932, inclusive, relative to pollution of the Potomac River, in the vicinity of the District of Columbia. The results of this investigation, with recommendations for future sewage disposal, are available in Senate Document No. 172, second session of the Seventy-second Congress.

In cooperation with the State health authorities, through the engineering divisions of the several States bordering the Ohio River, a study has been undertaken to ascertain the trend of the changes in the sanitary quality of the river water at the several waterworks intakes, due to increasing sewage and industrial-waste pollution and changes in flow conditions as a result of canalization of the entire watercourses.

Subsequent to a period of disagreeable tastes and odors in the Chicago water supply during the winter of 1932-33, the Public Health Service was requested to cooperate with the States of Indiana and Illinois and the city of Chicago in an investigation of the industrial-waste pollution of the southern end of Lake Michigan, with the end in view of ascertaining the taste- and odor-producing wastes, and studying possible methods of treatment for the removal of the offending substance prior to their discharge into the lake. Data previously collected by the interested agencies have been submitted to this office and reviewed; a memorandum has been prepared outlining methods of procedure for the future investigations of the problem; conferences have been held with representatives of industry.

## COOPERATIVE PUBLIC HEALTH ENGINEERING WORK

The cooperative public health engineering work with other divisions of the Public Health Service and other Federal agencies was continued. A total of 1,028 engineer days, or 25.8 percent of the time of the engineers, was devoted to this work. Advice, surveys, reports, and preparations of plans for the National Park Service and the Office of Indian Affairs required 714 engineer days; assistance to the Supervising Architect's Office in surveys and preparation of plans for

sanitary structures required 191 engineering days; 55 days were devoted to the work for the Bureau of Prisons; 21 days to the Forest Service; and 47 days to other agencies.

*National Park Service.*—In the eastern division of the National Park Service a number of investigations were made and small sewage treatment plants were designed for four areas.

In the western division, surveys and reports on sanitation were made for 14 national parks and 3 national monuments, together with preparation of plans, bills of material, and estimates for a number of sanitary projects, and for improvements to existing plants. General supervision was maintained over the sewage reclamation plant at the Grand Canyon and sewage treatment plant in the Yosemite National Park.

*Office of Indian Affairs.*—The district engineers continued to act as advisers to the superintendents of the various agencies in matters of environmental sanitation and made such surveys with plans and estimates as were required. During June 1933 the personnel of districts 3 and 5-6 devoted practically their entire time to sanitation of the Indian emergency conservation camps established on Indian reservations within those districts.

*Supervising architect's Office.*—Assistance was given the Supervising Architect's Office in connection with water supply and sewage disposal at various border and inspection stations. Plans were prepared in the office of district 5-6 for the sewage treatment plant at the United States Narcotic Farm, Lexington, Ky.

*Bureau of Prisons.*—The domestic quarantine division cooperated with mental hygiene division in matters of environmental sanitation and plans and operation of sanitary devices at the various Federal penal institutions.

*Forest Service.*—At the request of the Forest Service, surveys were made and plans prepared for camping areas. Advice was given relative to water supplies, sewerage, sewage disposal, and general sanitation.

*Lighthouse Service.*—Cooperation with the superintendent of the Twelfth Lighthouse District relative to water treatment on small vessels using Great Lakes water has been continued and a small treatment plant developed. Advisory assistance has also been rendered in connection with water supply and sewage disposal at airway weather stations.

*District of Columbia.*—A short study was made to determine the effect upon the water of the Potomac River of the discharge of waste at the disposal plant at Cherry Hill, Va.

*Other Federal agencies.*—Surveys and reports were made for other divisions of the Public Health Service, for the Coast Guard, Bureau of Standards, Bureau of Plant Industry, and United States Army Engineers.

#### MOSQUITO CONTROL, DISTRICT OF COLUMBIA

The Public Health Service continued the coordination and general supervision of the mosquito-control work in Washington and vicinity during the 1932 season; but since no funds were appropriated for the work beyond July 1933, no attempt was made to institute active control measures for 1933-34. Well coordinated control was carried on during 1932.

## SUMMARY OF WORK CARRIED ON BY THE VARIOUS DISTRICTS

*Distribution of time in days of the field personnel under the engineering section (exclusive of mosquito control in the District of Columbia and streams sanitation), fiscal year 1933*

Interstate quarantine:	Days	Supervising Architects' Office:	Days
Office.....	1, 591	Office.....	164
Field:		Field.....	27
Water.....	678	Bureau of Prisons:	
Shellfish.....	385	Office.....	28
National Park Service:		Field.....	27
Office.....	201	Other agencies:	
Field.....	53	Office.....	21
Office of Indian Affairs:		Field.....	47
Office.....	294	Technical meetings.....	51
Field.....	166	Leave.....	248
		Total days accounted for.....	
		3, 979	

## TABULAR SUMMARY

TABLE 1.—Vessel water-supply supervision

First inspections:		Major conferences:	
Passenger.....	102	With shipping officials.....	65
Freight.....	126	With others.....	26
Water boats.....	5	Water examinations made:	
Reinspections:		U.S. Public Health Service	
Passenger.....	160	laboratories.....	5
Freight.....	286	Other laboratories.....	1, 323
Water boats.....	6	Typhoid-fever cases reported:	
Certificates issued:		U.S. Public Health Service	
Regular, favorable.....	991	hospitals.....	26
Regular, not approved.....	19	U.S. Public Health Service	
Temporary, favorable.....	321	quarantine stations.....	2
Plans for vessel water systems		Health departments.....	1
examined:		On interstate vessels.....	2
Approval granted.....	16		
Approval withheld.....	3		

TABLE 2.—Railroad sanitation supervision

Inspections:		Water examinations:	
Sources of water supply.....	93	U.S. Public Health Service	
Coachyards.....	114	laboratories.....	78
Terminals.....	51	Other laboratories.....	200
Watering points.....	68	Major conferences:	
Dining cars.....	36	With railroad officials.....	36
Certificates:		With others.....	61
Data reports reviewed.....	2, 091		
Certificates prepared.....	3, 693		

TABLE 3.—Shellfish sanitation supervision

Inspections:		Laboratory examinations:	
Areas.....	37	U.S. Public Health Service	
Plants.....	807	laboratories.....	85
State certificates:		Other laboratories.....	3, 330
Approved.....	1, 301	Conferences.....	35
Not approved.....	10		
Approval withdrawn.....	0		
Canceled.....	135		

TABLE 4.—*Miscellaneous cooperation with governmental agencies*

Public Health Service (other divisions):		Bureau of Prisons:	
Surveys.....	5	Surveys.....	10
Conferences.....	8	Conferences.....	15
National Park Service:		Supervising Architect's Office:	
Surveys.....	15	Surveys.....	10
Conferences.....	35	Conferences.....	16
Office of Indian Affairs:		Other:	
Surveys.....	66	Surveys.....	11
Conferences.....	57	Conferences.....	46

## RURAL HEALTH WORK

The universal experience of public health administrators is that modern public-health service requires a permanent type of local organization under the leadership of a trained and experienced health officer. During the fiscal year, as for a number of previous years, the main objective of the rural sanitation work, therefore, has been to cooperate with States in demonstrating to local communities the value of health departments organized along lines which have proved to be effective. The assistance to States was threefold in character: (1) Financial aid, (2) temporary assignment of experienced personnel, and (3) consultation service on special problems.

Financial aid was rendered to 172 local health units in 28 States. The distribution of these units according to States is shown in the following table:

State	Number of units	State	Number of units	State	Number of units
Alabama.....	10	Louisiana.....	9	Oregon.....	2
Arizona.....	4	Maryland.....	2	South Carolina.....	13
Arkansas.....	12	Massachusetts.....	1	South Dakota.....	1
California.....	4	Michigan.....	7	Tennessee.....	9
Florida.....	3	Mississippi.....	11	Texas.....	9
Georgia.....	12	Missouri.....	1	Virginia.....	6
Idaho.....	1	Montana.....	3	Washington.....	2
Iowa.....	3	New Mexico.....	6	West Virginia.....	7
Kansas.....	4	North Carolina.....	11		
Kentucky.....	14	Ohio.....	5	Total.....	172

In two additional States, Nevada and Rhode Island, financial contributions were made for special activities conducted through the State health departments.

The Federal appropriation from which these funds were derived amounted to \$300,000 for the fiscal year ended June 30, 1933. Of this amount, \$264,854.56 was expended through specific allotments to demonstration health units, and \$18,917.64 was used for special studies and administration.

Since the county is the predominant type of local governmental unit for rural areas, most of these health units have been organized on a county basis. The basic program provides the usual health-department services, with special emphasis on the particular needs of the local area.

Special surveys of State health administration were made in the States of Washington, Iowa, and Idaho, and of local health administration in the city of Omaha and Douglas County and the city of

Lincoln and Lancaster County, Nebr., to determine local health problems and to advise local authorities on the best methods for their solution.

A limited number of county health departments has been selected for special study in order to determine in a more specific way the special health problems of rural people living under different social environmental and economic circumstances and to measure the effect of the several items which comprise the health program.

According to information collected from the State health departments, 581 counties or comparable areas were provided with health departments organized along the foregoing lines, a decrease of 35 over the preceding year. The total number of existing rural health units, though small and serving only about 28 percent of the rural population, represents a growth of approximately 15 years.



## DIVISION OF FOREIGN AND INSULAR QUARANTINE AND IMMIGRATION

In charge of Asst. Surg. Gen. F. A. CARMELIA

During the fiscal year 1933 the various quarantinable diseases continued to have widespread prevalence throughout the world. Yellow fever prevailed along the east coast of South America in Brazil and along the Ivory and Gold Coasts of Africa and adjacent interiors. Plague infection was reported from numerous parts of every continent except Australia, and broke out at sea on four ships engaged in international commerce. Cholera prevailed in one of the most devastating epidemics recorded in China, taking a death toll of nearly 34,000 persons in 312 cities and 23 provinces. Cholera continued to prevail in India and in the rural districts of the Philippine Islands, particularly in the southern central portion. Typhus fever was widespread in many parts of the world, with severe outbreaks occurring in Egypt, Russia, and Chile. Smallpox continued to exist in all parts of the world, but attained epidemic prevalence in Portugal, India, Egypt, and China.

Reflecting the effect of the world-wide economic depression, the volume of quarantine work performed during the year was approximately 60 percent of that performed in the fiscal year 1929, when it attained its greatest volume. During the fiscal year, 13,917 maritime vessels, carrying 1,763,926 persons, arrived at United States ports from foreign ports and were accorded inspection by medical officers of the Public Health Service prior to entry, to assure freedom from any of the quarantinable diseases. In addition, 4,186 airplanes arrived at airports of entry in the United States from foreign ports, requiring quarantine inspection. These planes carried 25,767 persons. Of this number, only 2,209 airplanes, carrying 20,396 persons of whom 2,327 were aliens, were subjected to medical examination by medical officers of the Public Health Service prior to entry. The remainder, comprising 1,977 airplanes, carrying 5,371 persons, entered without the medical examination required by law, due to permitting arrival at airports at which medical officers are not available.

There occurred no instance of the introduction of any of the quarantinable diseases into United States ports during the fiscal year. One vessel, carrying 31 persons, was detained on account of typhus fever, and 25 vessels, carrying 8,883 persons, were detained on account of cholera, while 1,567 vessels, in addition, were required to undergo quarantine treatment for the prevention of the introduction of plague, and 3,589 rats retrieved following fumigation of these vessels were examined for evidence of plague infection. A total of 2,111 persons was vaccinated against smallpox, and 5,278 persons were subjected to laboratory examinations for evidence of cholera infection, while 3,400 persons were vaccinated against cholera and 867 persons were subjected to laboratory examinations for infection with cerebrospinal meningitis. There were no detentions during the fiscal year on

account of yellow fever or smallpox. During the year, it was necessary for the department to assess fines aggregating only \$365 for violation of the act of February 15, 1893, due to failure of masters of vessels to present American consular bills of health, and for other violations of the quarantine laws administered by the Public Health Service.

The ratification of the International Sanitary Convention of Paris, revised 1926, by practically all of the important maritime countries of the world, is resulting in increased uniformity and better coordination of quarantine procedures applied to international commerce, and this has permitted considerable modification of the quarantine restrictions heretofore enforced by the United States; for instance, the number of ships required to undergo fumigation upon arrival at United States ports has been reduced approximately 50 percent. During the fiscal year, 2,356 vessels presented foreign international standard certificates of deratization, of which only 180 were determined to be not acceptable, and 1,291 vessels presented foreign international standard certificates of deratization exemption, of which only 123 were determined to be not acceptable, while 1,007 vessels were granted international standard certificates of deratization exemption by United States quarantine officers. This has resulted in a very large saving in expense and has materially reduced loss of ships' time through the elimination of unnecessarily repeated independent fumigations by the authorities of the various countries. There is noted a very decided international tendency not only to reduce the number of fumigations required, but also to improve the efficiency of such fumigations. Special studies were continued throughout the fiscal year at the New York Quarantine Station along these lines, in cooperation with the International Office of Public Hygiene in Paris, and included investigation of the practicability of establishing an international standard for sulphur dioxide fumigations and the adaptability of liquid sulphur dioxide to ship fumigation, as well as special problems presented in the fumigation of a loaded ship at the quarantine anchorage immediately upon arrival from a plague-infected port, prior to entry and going to dock for discharge of cargo. Certain countries had raised the question as to whether the practice of the United States in requiring the fumigation of loaded vessels under these circumstances did not exceed the provisions of the International Sanitary Convention; the quarantine commission of the International Office of Public Hygiene, at the May 1933 meeting, recognized the justification of the procedure under special circumstances, and it was agreed to extend the provisions of the convention, by amendment if necessary, to include such practice.

The special regulations governing the importation of parrots into the United States, prescribed in accordance with the provisions of Executive Order No. 5264, approved January 24, 1930, were revised on October 6, 1932, to include all birds of the parrot family and to require each commercial importation of such birds to be accompanied by a certificate from the duly constituted sanitary authority at the place of origin to the effect that, on inspection, all birds in the shipment had been found to be apparently well and in good sanitary condition, and that the aviary or other distributing establishment had been maintained in good sanitary condition and to the best knowledge and belief of the said sanitary authority was, at the time of shipment of the birds, free from psittacosis infection. The strict

enforcement of these regulations has resulted in the infection being found during the past year in only one shipment of parakeets—from Colombia, South America—which was held upon arrival at the San Francisco Quarantine Station and refused entry.

During the fiscal year, the prevalence of cerebrospinal meningitis in the Orient had decreased to such an extent that the danger of introducing the disease into the United States could be controlled satisfactorily with ordinary quarantine procedure and facilities available at United States ports of arrival, and Executive Order No. 5143, dated June 21, 1929, "Restricting for the time being the transportation of passengers from certain ports in the Orient to a United States port" was accordingly rescinded by the President on March 3, 1933, and the special quarantine regulations promulgated thereunder became ineffective on that date.

Quarantine inspection service, regularly provided daily at United States ports from sunrise to sunset was extended to a 24-hour basis at the port of New Orleans, La., effective October 24, 1932, under the provisions of the act of March 3, 1931. Application for similar extension of quarantine inspection hours after sunset has been filed for the ports of Boston, New York, Philadelphia, Norfolk, Charleston, and San Pedro, but consideration of these requests has been held in abeyance in view of the existing economic conditions and the lack of funds available for such extension of existing quarantine service at those ports.

During the fiscal year, the construction of a new quarantine station of modest capacity on the south side of the entrance channel at Miami, Fla., was completed, and the station will soon be placed in commission. A new diesel quarantine cutter of wrought iron construction, 60 feet in length, was completed in the early part of the year and was named *T. B. McClintic*. In addition, two diesel quarantine launches, 40 feet in length, designated as *Q-19* and *Q-20*, were constructed of wood during the latter part of the fiscal year, and the steam quarantine cutter *H. R. Carter*, attached to the New York Quarantine Station, was completely rebuilt and provided with a new boiler.

The rapid development of international aerial navigation, providing commercial intercourse between areas infected with one or more of the quarantinable diseases and infectible but noninfected areas, has accentuated the urgent need for some basis of international cooperation and the coordination of quarantine practice as applied to aircraft, and has culminated in the preparation of a draft convention under the auspices of the International Office of Public Hygiene in Paris, assisted by the International Commission for Air Navigation, set up under the convention relating to the regulation of aerial navigation, 1919. The draft international sanitary convention for air navigation was tentatively approved by the Second Pan American Conference of Directors of Health at Washington in April 1932, and was adopted by the permanent committee of the International Office of Public Hygiene in Paris at its April-May 1932 session. Subsequently it was formally submitted by the French Government to the United States for ratification, and the Government of the United States, through the State Department, has signified to the Netherland Government, as the depositary of the signed convention, its willingness to sign the convention with certain reservations similar to those made by the United States in ratifying the International Sanitary Convention of Paris, 1926. Inasmuch as the convention provides that ratification or ad-

hesion accompanied by reservations must be accepted by all prior signatory countries, the Netherland Government is taking steps to determine the acceptability of ratification with these reservations by the United States. It is not anticipated that objection will be raised by prior signatory governments, and the prompt ratification of the convention by the United States subject to these reservations upon receipt of notification from the Netherland Government that these reservations are acceptable to prior signatory countries, is a matter of urgent importance not only to facilitate the observation of measures for the protection of the United States against the introduction of quarantinable diseases through air commerce originating in foreign infected areas, but also to assist in the prevention of the international dissemination throughout the world of the infection of such diseases from infected areas, which ultimately would serve to reduce the exposure of the United States, as well as other noninfected countries to possible infection. In addition, the convention permits the imposition of only necessary coordinated and uniform restrictions in the various countries, and this serves to promote international air commerce, in the extension of which American companies are actively engaged.

*Medical inspection of aliens.*—During the fiscal year, 398,574 alien immigrants were examined, and 805,028 alien seamen were inspected at United States ports of entry by medical officers of the United States Public Health Service for mental or physical defects or diseases in accordance with the provisions of the immigration laws, of whom 322,685 alien seamen were examined for immigration purposes at quarantine stations in conjunction with quarantine inspection. A total of 1,625 alien immigrants (about 0.4 percent) and 458 alien seamen (about 0.05 percent) were certified to be afflicted with one or more of the defects or diseases requiring mandatory exclusion, and 10,157 alien immigrants (about 2.5 percent) and 392 alien seamen (about 0.04 percent) were certified to be afflicted with a defect or disease which was likely to affect their ability to earn a living.

As in the preceding year, there has continued a marked decrease in the number of applicants medically examined for immigration visas abroad, making possible still further consolidations in this work and an additional reduction in personnel. There were 26,543 applicants for immigration visas examined by medical officers in American consulates in foreign countries. Of this number, 549 (about 2.07 percent) were reported by the medical officers to the American consuls as being afflicted with one or more of the defects or diseases requiring mandatory exclusion, and 5,065 (about 19.08 percent) were reported as afflicted with a disease or condition which was likely to affect their ability to earn a living. Of 24,175 aliens to whom visas had been issued following a satisfactory medical examination in American consulates in foreign countries, only four were certified subsequently upon arrival at a United States port as being afflicted with a defect or disease requiring mandatory deportation.

Special arrangements were made during the year to facilitate the medical examination of alien crews on board trans-Pacific vessels stopping at Honolulu en route from the Orient to Pacific coast ports of the United States, which provide for the issuance by the examining medical officer at Honolulu to the immigration officers at that port of a "medical hold" form in the case of any member of a crew suspected, as a result of preliminary general examination, of being afflicted with any disease or defect enumerated in section 35 of the Immigration



Act of 1917, but whose examination, because of lack of time or facilities, cannot be completed while the vessel is in Honolulu. The alien is permitted to remain on board the vessel to complete the voyage to the Pacific coast port of destination for completion of his medical examination under an order upon the master of the vessel to segregate en route and hold such alien on board. There is no change in the handling of alien seamen who are certified upon arrival at Honolulu to be afflicted with any mental or physical defect or disease coming within the immigration laws.

An order was issued on August 19, 1932, by the Commissioner of Immigration at Ellis Island, changing the method of examining third-class aliens at New York. Previously, these aliens had been brought to Ellis Island for a complete medical examination, but since that date they have been examined on board the vessels on which they arrived, where conditions and lack of facilities do not permit as thorough medical examinations and accordingly result in the discovery and certification of a reduced number of defects and diseases. During the period January-June 1932 a total of 1,635 third-class passengers was medically examined at Ellis Island, of whom 282 were certified, and during the similar period in 1933, a total of 1,103 third-class passengers was examined on shipboard under the new procedure, of whom 75 were certified. Assuming comparable conditions, these results would indicate that the efficiency of the medical examinations performed on shipboard is approximately only 40 percent of that attainable when performed at the immigration station at Ellis Island.

### TRANSACTIONS AT MARITIME QUARANTINE STATIONS

TABLE 1.—Summary of transactions at maritime stations for the fiscal year 1933

Station	Vessels inspected	Vessels granted free pratique	Vessels fumigated		Passengers inspected	Crew inspected	Bills of health and port sanitary statements issued	Amount of bills rendered for quarantine services
			Cyanide	Sulphur				
Aberdeen, Wash.....	7	6	0	1	0	327	293	\$75.00
Angel Island, Calif. (San Francisco).....	504	462	61	0	26,092	38,239	0	14,018.97
Astoria, Oreg.....	23	15	10	0	5	999	430	611.00
Baltimore, Md.....	364	300	63	0	423	11,706	0	9,418.46
Beaufort, S.C.....	1	1	0	0	9	531	0	0
Boca Grande, Fla.....	15	15	0	4	4	500	0	508.73
Boston, Mass.....	801	646	107	0	32,708	56,360	0	18,646.35
Brunswick, Ga.....	6	6	0	1	2	162	0	142.37
Carrabelle, Fla.....	9	9	0	0	0	68	0	0
Charleston, S.C.....	106	97	5	1	169	3,631	0	1,185.17
Corpus Christi, Tex. <sup>1</sup> .....	31	31	0	3	6	1,084	472	474.49
Eastport, Maine.....	1	1	0	0	0	18	5	0
Eureka, Calif.....	2	2	0	0	0	67	19	20.00
Fall River, Mass.....	13	13	0	0	0	568	40	140.00
Fernandina, Fla. (Cumberland Sound).....	5	4	0	1	6	164	14	77.51
Fort Monroe, Va.....	247	234	4	27	2,197	10,276	0	4,450.08
Freeport, Tex.....	6	5	0	0	1	232	0	60.00
Galveston, Tex.....	524	503	21	0	812	17,325	0	6,898.67
Georgetown, S.C.....	0	0	0	0	0	0	76	0
Gulfport, Miss.....	7	7	0	1	2	245	79	127.29
Jacksonville, Fla. (St. Johns River).....	85	72	18	0	149	2,513	538	1,712.65
Key West, Fla.....	147	139	0	3	9,794	10,072	16	2,029.61
Lewes, Del. (Delaware Breakwater).....	1	1	0	0	0	7	0	5.00
Marcus Hook, Pa.....	604	539	41	0	570	20,416	3,806	9,250.55
Marshfield, Oreg. (Coos Bay).....	2	2	0	0	0	92	10	25.00
Miami, Fla.....	571	571	29	0	11,093	15,600	653	4,462.00
Mobile, Ala.....	178	151	15	0	156	5,235	0	2,451.97

<sup>1</sup> Includes Port Aransas, Tex.



TABLE 1.—Summary of transactions at maritime stations for the fiscal year 1933—  
Continued

Station	Vessels in- spected	Vessels grant- ed free pratique	Vessels fumig- ated		Pas- sen- gers in- spected	Crew in- spected	Bills of health and port sanitary state- ments issued	Amount of bills rendered for quar- antine services
			Cya- nide	Sul- phur				
New Bedford, Mass.....	3	3	0	2	0	70	0	\$85.03
New London, Conn.....	21	21	0	0	42	623	12	100.00
New Orleans, La.....	967	859	73	0	8,018	38,709	3,342	17,834.62
Newport, R.I.....	4	4	0	0	9	183	22	25.00
New York, N.Y. <sup>2</sup> .....	3,175	2,901	213	0	339,059	511,847	17,985	63,754.91
Ogdensburg, N.Y.....	2	2	0	0	0	0	2	20.00
Panama City, Fla.....	27	26	2	0	0	922	52	437.83
Pensacola, Fla.....	53	38	6	0	13	1,631	833	1,087.09
Plymouth, Mass.....	7	6	0	0	0	194	0	0
Port Everglades, Fla.....	8	8	0	0	29	31	0	40.00
Portland, Maine.....	91	77	0	0	40	2,727	65	955.00
Portland, Oreg.....	4	2	12	0	3	201	2,504	1,243.20
Port San Luis, Calif. (San Luis Obispo).....	29	29	0	0	0	1,128	29	520.00
Port Townsend, Wash. <sup>3</sup> .....	49	40	42	0	5	3,445	1,192	4,620.04
Providence, R.I.....	47	46	0	0	554	2,094	37	577.00
Sabine, Tex.....	227	201	8	0	105	7,334	0	2,660.48
San Diego, Calif. (Point Loma).....	390	380	0	0	10,061	14,806	1	3,137.00
San Pedro, Calif.....	1,138	906	96	0	19,994	61,777	7,806	21,905.06
Savannah, Ga.....	67	50	18	0	58	1,948	0	1,579.69
Searsport, Maine.....	10	10	0	0	0	153	10	150.00
South Bend, Wash.....	14	14	0	0	0	524	40	145.00
Southport, N.C. (Cape Fear).....	44	41	0	2	34	1,335	0	691.10
Tampa, Fla.....	189	166	8	0	231	4,069	0	2,016.08
Vineyard Haven, Mass.....	1	1	0	0	0	7	0	5.00
West Palm Beach, Fla.....	108	108	0	0	215	409	0	540.00
Total.....	10,935	9,771	852	46	462,668	852,622	40,383	200,820.00
Alaska:								
Ketchikan.....	0	0	0	0	0	0	0	0
Wrangell.....	0	0	0	0	0	0	0	0
Total.....	0	0	0	0	0	0	0	0
Hawaii:								
Ahukini.....	0	0	0	0	0	0	33	0
Hilo.....	14	14	0	0	4	574	183	120.00
Honolulu.....	156	145	6	0	26,010	40,437	629	3,230.00
Kahului.....	0	0	0	0	0	0	152	0
Port Allen.....	3	3	0	0	0	96	67	30.00
Lahaina.....	0	0	0	0	0	0	48	0
Makaweli.....	0	0	0	0	0	0	0	0
Total.....	173	162	6	0	26,014	41,107	1,112	3,380.00
Philippines:								
Cavite.....	1	1	0	0	0	150	3	-----
Cebu.....	427	0	0	97	11,444	18,254	376	-----
Dayao.....	40	0	0	0	526	3,334	130	-----
Iloilo.....	160	1	0	329	1,080	8,102	305	-----
Jolo.....	26	0	0	0	598	824	52	-----
Legaspi.....	8	0	0	0	0	214	49	-----
Manila.....	1,090	331	72	112	80,144	102,200	1,210	-----
Olongapo.....	1	1	0	0	0	167	4	-----
Zamboanga.....	11	0	0	19	101	640	82	-----
Total.....	1,764	334	72	557	93,893	133,885	2,211	0
Puerto Rico:								
Aguadilla.....	0	0	0	0	0	0	234	0
Arecibo.....	0	0	0	0	0	0	95	0
Arroyo.....	5	5	0	0	10	41	148	50.00
Central Aguirre.....	0	0	0	0	0	0	87	0
Fajardo.....	59	59	0	0	1	331	397	310.00
Guinea.....	167	167	0	2	324	7,890	121	1,580.00
Humacao.....	10	10	0	0	9	161	85	70.00
Mayaguez.....	33	33	0	0	2	309	428	165.00
Ponce.....	23	19	0	0	42	396	320	165.00
San Juan.....	457	396	8	0	9,121	26,148	1,145	5,811.82
Total.....	754	689	8	2	9,509	35,276	3,060	8,151.82
Virgin Islands:								
Christiansted.....	12	12	0	0	5	138	285	75.00
Frederiksted.....	40	40	0	0	1,980	3,053	69	625.00
St. John.....	0	0	0	0	0	0	0	0
St. Thomas.....	239	163	1	23	2,045	8,759	537	2,726.46
Total.....	291	215	1	23	4,030	11,950	891	3,426.46
Total, all stations.....	13,917	11,171	939	628	596,114	1,074,840	47,657	215,778.28

<sup>2</sup> Includes Perth Amboy, N.J.<sup>3</sup> Includes all ports on Puget Sound.

## MEXICAN BORDER STATIONS

TABLE 2.—Summary of quarantine transactions on the Mexican border for the fiscal year 1933

Station	Number of passengers from interior Mexico inspected	Number of local passengers inspected	Total number of passengers inspected	Total number of persons disinfected	Total number of persons passed without treatment	Total number of persons vaccinated	Total number of sick held for observation	Total number of sick refused admission	Total pieces of baggage disinfected
Brownsville, Tex.-----	1,369	715,973	717,342	112	716,376	854	0	0	0
Calexico, Calif.-----	0	10,398	10,398	0	9,992	397	1	8	0
Columbus, N. Mex.-----	236	117	353	0	218	120	0	15	0
Del Rio, Tex.-----	544	54,275	54,819	622	53,534	705	0	0	349
Douglas, Ariz.-----	1,702	3,550	5,252	5,133	0	467	0	60	0
Eagle Pass, Tex.-----	4,737	540,279	545,016	9,030	535,986	1,764	0	0	9,949
El Paso, Tex. <sup>1</sup> -----	7,528	4,731,233	4,738,761	24,623	4,700,542	13,561	0	35	1,039
Hidalgo, Tex.-----	1,786	192,268	194,054	188	191,563	2,261	35	7	11
Laredo, Tex. <sup>2</sup> -----	63,210	1,609,600	1,672,810	3,123	1,641,799	31,011	248	0	3,635
Naco, Ariz.-----	0	5,198	5,198	0	4,576	518	0	104	0
Nogales, Ariz.-----	3,692	18,497	22,189	9	21,473	707	0	0	9
Presidio, Tex.-----	21	31,555	31,576	55	31,010	501	3	7	8
Rio Grande City, Tex.-----	271	10,575	10,846	4	10,380	462	0	0	1,213
Roma, Tex.-----	4,116	41,258	45,374	7	44,498	876	0	0	8
San Ysidro, Calif.-----	3,374	8,350	11,724	0	10,623	895	0	206	0
Sasabe, Ariz.-----	0	608	608	0	346	262	0	0	0
Thayer (Mercedes), Tex.-----	24	68,678	68,702	5	68,155	536	0	6	0
Zapata, Tex.-----	448	7,934	8,382	0	6,968	1,414	1	0	0
Total-----	93,058	8,050,346	8,143,404	42,911	8,048,039	57,311	288	448	16,221

<sup>1</sup> Includes the subports Fort Hancock, Guadalupe Gate, and Ysleta.<sup>2</sup> Includes the subports Minera and San Ygnacio.

## TRANSACTIONS AT UNITED STATES AIRPORTS OF ENTRY FOR AIRPLANES FROM FOREIGN PORTS

TABLE 3.—Summary of transactions at continental and insular stations for the fiscal year 1933

Location	Name of airport	Distance in miles to nearest Public Health Service station	Date designated	Number of air-planes arriving from foreign ports	Number of air-planes inspected by Public Health Service	Number of persons arriving from foreign ports or places	Number of persons inspected by Public Health Service	Number of aliens inspected by Public Health Service	Number of aliens certified for disease
Ajo, Ariz.	Municipal Airport	6	Nov. 15, 1929	1	0	3	0	0	0
Akron, Ohio <sup>1</sup>	do <sup>2</sup>		Apr. 8, 1929						
Albany, N. Y.	Municipal Field		Sept. 28, 1928	0	0	0	0	0	0
Bellingham, Wash.	Graham Airport <sup>2</sup>		Apr. 18, 1931	2	0	4	0	0	0
Brownsville, Tex.	Municipal Airport	5	Jan. 8, 1930	437	437	2, 816	2, 816	307	11
Buffalo, N. Y.	do		June 10, 1929	0	0	0	0	0	0
Calais, Maine	Pan American Airways Seaplane Base, St. Croix River <sup>2</sup>		July 23, 1931	0	0	0	0	0	0
Calxico, Calif.	Calxico Municipal Airport <sup>2</sup>		Jan. 10, 1933	0	0	0	0	0	0
Caribou, Maine <sup>1</sup>	Caribou Municipal Airport <sup>2</sup>		Oct. 31, 1932						
Cleveland, Ohio	Cleveland Municipal Airport <sup>2</sup>		Sept. 23, 1932	0	0	0	0	0	0
	Wayne County Airport		Feb. 10, 1931						
Detroit, Mich.	Detroit Municipal Airport <sup>2</sup>		June 19, 1931	134	0	317	0	0	0
	Ford Airport <sup>2</sup>		Aug. 1, 1929						
Douglas, Ariz.	Douglas Airport <sup>2</sup>		Jan. 8, 1930	0	0	0	0	0	0
Duluth, Minn.	Duluth Municipal Airport <sup>2</sup>		Sept. 4, 1931	1	0	5	0	0	0
	Duluth Boat Club Seaplane Base <sup>2</sup>		do						
Eagle Pass, Tex.	Eagle Pass Airport <sup>2</sup>	1½	Mar. 5, 1930	0	0	0	0	0	0
El Paso, Tex.	Municipal Airport	9	Aug. 23, 1932	122	122	686	686	151	10
Great Falls, Mont. <sup>1</sup>	Great Falls Municipal Airport <sup>2</sup>		June 2, 1930						
Havre, Mont.	Havre Municipal Airport <sup>2</sup>		do	0	0	0	0	0	0
Juneau, Alaska	Juneau Airport <sup>2</sup>		June 18, 1930	0	0	0	0	0	0
Ketchikan, Alaska	Ketchikan Airport <sup>2</sup>		do	0	0	0	0	0	0
Key West, Fla.	Meacham Field	4	Dec. 20, 1927	2	2	14	14	12	0
Laredo, Tex.	Laredo Airdrome <sup>2</sup>	3½	Jan. 24, 1930	28	28	103	103	8	0
Malone, N. Y.	Malone Airport <sup>2</sup>		Apr. 18, 1930	4	0	10	0	0	0
	Pan American Field	8½	Oct. 16, 1928						
Miami, Fla.	Dinner Key Seaplane Base <sup>2</sup>	6	Mar. 7, 1930	1, 175	1, 175	13, 719	13, 719	1, 454	8
	Curtiss Air Station <sup>2</sup>	¼	Apr. 22, 1930						
Minot, N. Dak. <sup>1</sup>	Port of Minot <sup>2</sup>		Nov. 30, 1931						
Nogales, Ariz.	Municipal Airport <sup>2</sup>	9	June 27, 1929	37	36	82	79	7	0
Ogdensburg, N. Y.	Billings Field <sup>2</sup>		Nov. 30, 1931	0	0	0	0	0	0
	Ogdensburg Harbor <sup>2</sup>		Mar. 1, 1932						
Pembina, N. Dak.	Fort Pembina Airport <sup>2</sup>		Feb. 2, 1930	386	0	792	0	0	0
Plattsburg, N. Y. <sup>1</sup>	Mobodo Airport <sup>2</sup>		June 2, 1930						
Portal, N. Dak.	Portal Airport <sup>2</sup>		Jan. 8, 1930	0	0	0	0	0	0
Port Angeles, Wash.	Port Angeles Airport <sup>2</sup>	52	do	0	0	0	0	0	0
Port Townsend, Wash.	Port Townsend Airport <sup>2</sup>	12	June 18, 1930	0	0	0	0	0	0

Rouses Point, N.Y.	Rouses Point Seaplane Base <sup>1</sup>	July 14, 1932	0	0	0	0	0	0
St. Thomas, Virgin Islands	St. Thomas Airport <sup>1</sup>		51	51	407	407	0	0
San Diego, Calif.	San Diego Municipal Airport <sup>2</sup>	Jan. 24, 1930	1,149	1	3,608	1	0	0
San Juan, P.R.	Isla Grande <sup>2</sup>	Jan. 19, 1929	222	222	2,124	2,124	345	4
Sandusky, Ohio <sup>1</sup>	Parker Field <sup>2</sup>	July 14, 1932						
Scobey, Mont.	Scobey Airport <sup>2</sup>	June 2, 1930	4	4	9	9	0	0
Seattle, Wash.	Boeing Municipal Air Field	Sept. 11, 1928	300	0	630	0	0	0
	Lake Union	Dec. 27, 1928						
	Skagway Municipal Airport <sup>2</sup>	Nov. 30, 1931						
Skagway, Alaska <sup>1</sup>	Skagway Seaplane Base <sup>2</sup>	do						
Spokane, Wash. <sup>1</sup>	Spokane Municipal Airport (Felts Field) <sup>2</sup>	June 2, 1931						
Swanton, Vt. <sup>1</sup>	Missisquoi Airport <sup>2</sup>	July 18, 1930						
Watertown, N.Y. <sup>1</sup>	Watertown Municipal Airport <sup>2</sup>	June 2, 1930						
West Palm Beach, Fla.	Roosevelt Flying Service Base (Currie Common Park) <sup>2</sup>	Mar. 10, 1931	131	131	438	438	43	0
Wrangell, Alaska	Wrangell Seaplane Base <sup>2</sup>	Nov. 30, 1931	0	0	0	0	0	0
Total			4,186	2,209	25,767	20,396	2,327	33

<sup>1</sup> No medical officer of Public Health Service available.<sup>2</sup> Temporary permission.<sup>3</sup> Authorized for use but not officially designated.

## TRANSACTIONS AT FOREIGN PORTS

TABLE 4.—Summary of quarantine transactions at foreign ports, fiscal year 1933

Location	Vessels inspected	Fumigation of vessels observed	Passengers inspected	Crews inspected	Bills of health countersigned	Medical examinations of Service beneficiaries
Amoy, China.....	73	0	18,635	7,897	84	0
Guantanamo Bay, Cuba.....	8	0	6	309	65	0
Habana, Cuba.....	0	41	0	0	1,517	0
Hongkong, China.....	514	1	56,981	89,876	673	0
Shanghai, China.....	351	0	6,200	5,400	712	0
Tampico, Mexico.....	270	9	72	9,175	270	0
Vera Cruz, Mexico.....	226	0	5,680	17,406	226	0
Puerto Mexico, Mexico.....	2	2	19	0	80	0
Total.....	1,444	53	87,593	130,063	3,627	0
EUROPEAN PORTS						
Antwerp, Belgium <sup>1</sup> .....	0	0	727	0	116	0
Belfast, Ireland.....	0	0	1,786	0	52	0
Bergen, Norway <sup>1</sup> .....	0	0	201	0	1	0
Bremen, Germany <sup>1</sup> .....	0	21	2,102	0	31	1
Copenhagen, Denmark <sup>2</sup> .....	0	0	293	0	43	12
Dublin, Irish Free State.....	0	0	0	0	41	12
Danzig Free City.....	25	0	3,664	2,294	2	0
Genoa, Italy.....	37	37	6,837	0	346	11
Glasgow, Scotland.....	0	0	3,411	0	96	0
Hamburg, Germany.....	0	102	15,453	0	657	14
Liverpool, England <sup>3</sup> .....	0	0	7,691	0	0	2
London, England.....	0	24	321	0	331	21
Marseille, France.....	26	7	0	0	193	1
Naples, Italy.....	62	0	11,565	0	256	69
Palermo, Italy <sup>1</sup> .....	0	0	101	0	12	0
Piraeus (Athens), Greece.....	29	0	1,209	2,276	29	16
Rotterdam, Holland <sup>1</sup> .....	0	0	1,438	0	117	0
Southampton, England <sup>4</sup> .....	0	0	12,502	0	147	2
Goteborg, Sweden <sup>5</sup> .....						
Oslo, Norway <sup>5</sup> .....						
Stockholm, Sweden <sup>5</sup> .....						
Total.....	179	191	69,301	4,570	2,470	161
Total, all stations.....	1,623	244	156,894	134,633	6,097	161

<sup>1</sup> Work discontinued Aug. 31, 1932.<sup>2</sup> Work discontinued Sept. 30, 1932.<sup>3</sup> Work discontinued Feb. 28, 1933.<sup>4</sup> Work discontinued Oct. 31, 1932.<sup>5</sup> Medical officer on immigration duty reports no quarantine work done during the year.



## MEDICAL INSPECTION OF ALIENS

TABLE 5.—*Alien passengers and seamen inspected and certified at maritime ports in the United States and possessions during the fiscal year 1933*

Place	Number of alien passengers examined	Alien passengers certified <sup>1</sup>					Number of alien seamen examined	Alien seamen certified <sup>1</sup>				
		Class A		Class B	Class C	Total		Class A		Class B	Class C	Total
		I	II					I	II			
ATLANTIC COAST												
Baltimore, Md.	29		1	1		2	7,795	1	13	20	1	35
Beaufort, S.C.	0					0	0					0
Boston, Mass.	4,297	2	4	88	12	106	55,433	3	41	279	4	327
Brunswick, Ga.	2					0	162					0
Charleston, S.C.	19					0	2,455		5			5
Fall River, Mass.	0					0	568					0
Fernandina, Fla.	2					0	126					0
Fort Monroe, Va. <sup>2</sup>	324			2		2	6,436		9	3	1	13
Fort Pierce, Fla.	0					0	0					0
Georgetown, S.C.	0					0	0					0
Gloucester, Mass.	0					0	126			1	1	2
Jacksonville, Fla.	33					0	1,699		9			9
Key West, Fla.	3,672	1		15		16	1,417					16
Lewes, Del.	0					0	7					7
Miami, Fla.	2,815	1	1	7	6	15	6,282	1				1
New Bedford, Mass.	1				1	1	42				1	1
New London, Conn.	0					0	0					0
Newport, R.I.	0					0	0					0
New York, N.Y. (Ellis Island)	123,891	41	114	3,645	32	3,832	426,150	4	116	2		122
Perth Amboy, N.J.	0					0	1,180					0
Philadelphia, Pa.	199					0	17,555		14			14
Plymouth, Mass.	0					0	193	4				4
Port Everglades, Fla.	0					0	8					0
Portland, Maine	38					0	2,728		5			5
Providence, R.I.	258		1	4	2	7	1,371		2			2
Savannah, Ga.	49					0	1,323		2			2
Searsport, Maine	0					0	453	1				1
Vineyard Haven, Mass.	0					0	7					0
Washington, N.C.	0					0	0					0
West Palm Beach, Fla.	65					0	170					0
Wilmington, N.C.	34					0	825	2				2
Total	135,728	45	121	3,762	53	3,981	534,211	16	216	305	8	445
GULF COAST												
Boca Grande, Fla.	0					0	165					0
Carrabelle, Fla.	0					0	39					0
Cedar Keys, Fla.	0					0	0					0
Corpus Christi, Tex.	0					0	742					0
Freeport, Tex.	1					0	232					0
Galveston, Tex.	130			1		1	12,782					0
Gulfport, Miss.	0					0	153					0
Mobile, Ala.	59		1			1	3,759		5			5
Morgan City, La. (Atchafalaya)	0					0	0					0
New Orleans, La.	2,006	1	18	42	71	132	21,651	1	57	29	77	164
Panama City, Fla.	0					0	55					0
Pascagoula, Miss.	0					0	0					0
Pensacola, Fla.	3					0	934		2	2		4
Port Aransas, Tex.	0					0	0					0
Port St. Joe, Fla.	0					0	0					0
Sabine, Tex.	27					0	4,497		7	1	1	9
Tampa, Fla.	72					0	1,872		7			7
Total	2,298	1	19	43	71	134	46,881	1	78	32	78	189

<sup>1</sup>Class A-I: Aliens certified for idiocy, imbecility, feeble-mindedness, insanity, epilepsy, chronic alcoholism. Class A-II: Aliens certified for tuberculosis or other loathsome or dangerous contagious diseases. Class B: Aliens certified for diseases or defects which affect ability to earn a living. Class C: Aliens certified for diseases or defects of less degree.

<sup>2</sup>Includes Norfolk, Va., and Newport News, Va.

TABLE 5.—*Alien passengers and seamen inspected and certified at maritime ports in the United States and possessions during the fiscal year 1933—Continued*

Place	Number of alien passengers examined	Alien passengers certified					Number of alien seamen examined	Alien seamen certified				
		Class A		Class B	Class C	Total		Class A		Class B	Class C	Total
		I	II					I	II			
PACIFIC COAST												
Aberdeen, Wash.	0					0	327					0
Angel Island, Calif. (San Francisco)	4,324		12	79	62	153	9,575		15	1		16
Astoria, Oreg.	5					0	854		3		1	4
Eureka, Calif.	0					0	0					0
Fort Bragg, Calif.	0					0	0					0
Marshfield, Oreg. (Coos Bay)	0					0	92					0
Monterey, Calif.	0					0	0					0
Portland, Oreg.	6					3	201					0
San Diego, Calif.	517	3	9	4	2	18	6,098					0
San Luis Obispo, Calif.	0					0	908					0
San Pedro, Calif.	3,794		2	56	10	68	43,626	3	48	12	4	67
Santa Barbara, Calif.	0					0	0					0
Seattle, Wash. <sup>1</sup>	2,306	5	13	28	105	151	11,161	1	1	0	8	10
South Bend, Wash.	0					0	491					0
Total	10,957	11	36	167	179	393	73,333	4	67	13	13	97
INSULAR												
Alaska:												
Ketchikan	0					0	0					0
Hawaii:												
Honolulu	2,303	1	15	9	17	42	31,943		62	2		64
Philippines:												
Cebu	60					0	4,009					0
Davao	39					0	3,299					0
Iloilo	937					0	7,681					0
Jolo	182					0	750					0
Legaspi	0					0	269					0
Manila	26,593		25	58	6	89	67,811		1			1
Zamboanga	175					0	556					0
Total	27,986	0	25	58	6	89	84,375	0	1	0	0	1
Puerto Rico:												
Aguadilla	0					0	0					0
Arecibo	0					0	0					0
Arroyo	10					0	41					0
Central Aguirre (Jobos)	0					0	0					0
Fajardo	42					0	265					0
Guanica	7					0	4,776		1			1
Humacao	9					0	128					0
Mayaguez	0					0	189					0
Ponce	39					0	203		2			2
San Juan	6,820		1	5	1	7	14,022		6			6
Total	6,927	0	1	5	1	7	19,624	0	9	0	0	9
Total, all stations.	186,199	58	217	4,044	327	4,646	790,367	21	433	352	99	905

<sup>3</sup> Includes all ports on Puget Sound.

TABLE 6.—*Aliens inspected and certified at international border stations, fiscal year 1933*

Place	Number of persons making permanent entry examined	Number of persons making temporary entry examined	Other persons examined	Total number of persons examined	Alien passengers certified				
					Total	Class A		Class B	Class C
						I	II		
MEXICAN BORDER									
Ajo, Ariz.....	0	0	335	335	0	0	0	0	0
Brownsville, Tex.....	819	58	9,766	10,643	289	6	13	209	61
Calexico, Calif.....	181	73	9,822	10,076	113	1	76	7	29
Columbus, N. Mex.....	0	236	122	358	10	0	2	5	3
Del Rio, Tex.....	41	0	3,629	3,670	2	0	0	2	0
Douglas, Ariz.....	1,702	0	3,550	5,252	119	8	41	12	58
Eagle Pass, Tex.....	274	12	2,446	2,732	32	4	4	19	5
El Paso, Tex. <sup>1</sup> .....	1,052	4,363	10,701	16,116	2,727	55	223	2,106	343
Hidalgo, Tex.....	202	9	1,696	1,907	368	0	69	143	156
Laredo, Tex.....	19,209	540	9,769	29,518	287	4	44	230	9
Naco, Ariz.....	39	0	5,159	5,198	292	10	65	45	172
Nogales, Ariz.....	521	4,486	13,490	18,497	631	11	76	388	156
Presidio, Tex.....	4	2	743	749	109	4	43	29	33
Rio Grande City, Tex.....	3	0	282	285	11	0	8	0	3
Roma, Tex.....	3	0	293	296	37	0	3	10	24
San Ysidro, Calif.....	738	816	10,170	11,724	507	7	61	439	0
Sasabe, Ariz.....	3	3	602	608	2	0	0	0	2
Thayer (Mercedes), Tex.....	2	0	556	558	41	2	8	24	7
Tucson, Ariz.....	0	0	666	666	165	16	117	19	13
Zapata, Tex.....	190	70	187	447	7	0	0	7	0
Total.....	24,983	10,668	83,984	119,635	5,749	128	853	3,694	1,074
CANADIAN BORDER									
Bellingham, Wash.....	0	0	0	0	0	0	0	0	0
Blaine, Wash.....	353	0	303	656	85	10	2	28	45
Buffalo, N. Y.....	59	623	34	716	121	16	9	82	14
Calais, Maine.....	126	0	0	126	20	4	3	11	2
Chicago, Ill.....	0	0	0	0	0	0	0	0	0
Detroit, Mich.....	1,475	2,064	2,187	5,726	760	63	40	604	53
Duluth, Minn.....	2	600	1,264	1,866	6	0	0	6	0
Eastport, Idaho.....	147	338	30	515	88	2	3	45	38
Eastport, Maine.....	4	1,310	38,238	39,552	0	0	0	0	0
Erie, Pa.....	0	0	0	0	0	0	0	0	0
Halifax, Nova Scotia, Canada.....	386	201	119	706	277	5	3	92	177
Havre, Mont.....	0	5	0	5	0	0	0	0	0
Houlton, Maine.....	222	0	0	222	4	3	0	1	0
International Falls, Minn.....	39	2,602	20	2,661	21	5	0	16	0
Jackman, Maine.....	42	0	46	88	46	0	0	6	40
Lewiston, N. Y.....	143	166	14,984	15,293	38	3	1	21	13
Malone, N. Y.....	11	17	23	51	14	3	0	1	10
Montreal, Canada.....	931	0	0	931	242	47	0	173	22
Newport, Vt.....	309	117	403	829	139	12	11	15	101
Niagara Falls, N. Y.....	179	314	813	1,306	63	8	8	39	8
Northport, Wash.....	0	15	30	45	5	0	0	5	0
Noyes, Minn.....	24	0	59	83	32	5	2	22	3
Ogdensburg, N. Y.....	20	8	1	29	9	2	0	4	3
Oroville, Wash.....	3	11	11,742	11,756	0	0	0	0	0
Portal, N. Dak.....	30	3	34	67	19	1	0	18	0
Port Angeles, Wash.....	0	0	0	0	0	0	0	0	0
Port Huron, Mich.....	107	188	397	692	173	19	5	121	28
Quebec, Canada.....	1,068	905	0	1,973	256	2	1	214	39
Rouses Point, N. Y.....	228	0	350	578	53	4	5	42	2
St. Albans, Vt.....	35	3	82	120	22	3	0	10	9
St. John, New Brunswick, Canada.....	225	305	0	530	36	4	2	20	10
Sault Ste. Marie, Mich.....	13	0	0	13	5	3	0	2	0
Scobey, Mont.....	7	0	0	7	0	0	0	0	0
Sumas, Wash.....	72	8	32	112	39	2	5	28	4
Sweetgrass, Mont.....	63	656	0	719	1	1	0	0	0
Van Buren, Maine.....	20	11	12	43	2	1	0	1	0
Vanceboro, Maine.....	244	378	28	650	1	1	0	0	0
Vancouver, British Columbia, Canada.....	0	437	0	437	96	8	8	74	6
Victoria, British Columbia, Canada.....	183	0	0	183	38	2	1	12	23
Winnipeg, Manitoba, Canada.....	711	242	2,418	3,371	799	8	7	675	109
Yarmouth, Nova Scotia, Canada.....	34	16	33	83	37	5	1	31	0
Total.....	7,515	11,543	73,682	92,740	3,547	252	117	2,419	759
Total, all stations.....	32,498	22,211	157,666	212,375	9,296	380	970	6,113	1,833

<sup>1</sup> Includes the subports Fort Hancock, Guadalupe Gate, and Ysleta.

TABLE 7.—*Alien seamen inspected and certified at international border stations  
fiscal year 1933*

Place	Number of alien seamen examined	Alien seamen certified				
		Class A		Class B	Class C	Total
		I	II			
Bellingham, Wash.....	244	0	0	0	0	0
Brownsville, Tex.....	25	0	0	0	0	0
Buffalo, N. Y.....	13, 296	0	4	40	40	84
Chicago, Ill.....	18	0	0	0	0	0
Duluth, Minn.....	18	0	0	0	0	0
Eastport, Maine.....	493	0	0	0	0	0
Erie, Pa.....	278	0	0	0	0	0
Lewiston, N. Y.....	123	0	0	0	0	0
Ogdensburg, N. Y.....	159	0	0	0	2	2
Port Angeles, Wash.....	7	0	0	0	0	0
Total.....	14, 661	0	4	40	42	86

TABLE 8.—*Number and character of the mandatorily excludable conditions certified  
at United States ports during the fiscal year 1933*

	Idiocy, imbecility, or feeble-mindedness	Epilepsy	Insanity	Constitutional psy- chopathic inferiority	Chronic alcoholism	Tuberculosis	Trachoma	Favus	Syphilis	Soft chancre	Gonorrhea	Other dangerous or loathsome conta- gious diseases	Total
Alien passengers....	91	40	72	110	24	139	252	15	220	11	345	125	1, 444
Alien seamen.....	0	0	4	1	0	13	4	0	67	83	162	58	392

TABLE 9.—*Distribution, according to class, of applicants for immigration visas who were medically examined during the fiscal year 1933*

Country and consular office	Total number of applicants examined	Number of applicants in each class			Percentage of applicants in each class		
		Quota	Non-quota	Non-immigrants	Quota	Non-quota	Non-immigrants
WESTERN HEMISPHERE							
Cuba: Habana.....	987	319	666	2	32.3	67.5	0.2
Canada, total.....	8,449	1,925	5,188	1,336	22.8	61.4	15.8
Montreal.....	3,165	551	1,863	751	17.0	59.0	24.0
Quebec.....	337	3	334	0	.9	99.1	0
Toronto.....	1,643	806	837	0	49.0	51.0	0
Vancouver.....	544	119	425	0	21.9	78.1	0
Windsor.....	1,349	280	1,069	0	20.7	79.3	0
Winnipeg.....	1,135	155	397	583	13.7	34.9	51.4
Yarmouth.....	276	11	263	2	4.0	95.3	.7
All countries, Western Hemisphere.....	9,436	2,244	5,854	1,338	23.8	62.0	14.2
EUROPE							
Belgium: Antwerp.....	294	153	141	0	52.0	48.0	0
England, total.....	1,843	889	954	0	48.2	51.8	0
Liverpool <sup>1</sup> .....	177	92	85	0	52.0	48.0	0
London.....	1,615	769	846	0	47.6	52.4	0
Southampton <sup>1</sup> .....	51	28	23	0	54.9	45.1	0
Irish Free State: Dublin.....	566	234	332	0	41.3	58.7	0
Northern Ireland: Belfast.....	248	150	98	0	60.5	39.5	0
Scotland: Glasgow.....	926	429	491	6	46.4	53.0	.6
Germany, total.....	3,249	2,155	1,092	2	66.4	33.6	.1
Berlin.....	1,210	809	401	0	66.0	34.0	0
Bremen <sup>1</sup> .....	72	46	26	0	63.9	36.1	0
Cologne <sup>1</sup> .....	131	92	39	0	70.2	29.8	0
Hamburg.....	759	444	315	0	58.5	41.5	0
Stuttgart.....	1,077	764	311	2	70.9	29.0	.1
Holland: Rotterdam.....	466	342	122	2	73.4	26.2	.4
Poland: Warsaw.....	2,518	1,415	1,101	2	56.2	43.7	.1
Denmark: Copenhagen.....	394	218	176	0	55.3	44.7	0
Norway, total.....	437	210	227	0	48.1	51.9	0
Bergen <sup>1</sup> .....	22	11	11	0	50.0	50.0	0
Oslo.....	415	199	216	0	47.9	52.1	0
Sweden, total.....	479	213	266	0	44.5	55.5	0
Goteborg.....	229	79	150	0	34.5	65.5	0
Stockholm.....	250	134	116	0	53.6	46.4	0
Italy, total.....	4,921	1,375	3,546	0	27.9	72.1	0
Genoa.....	1,051	355	696	0	33.8	66.2	0
Naples.....	3,582	940	2,642	0	26.2	73.8	0
Palermo <sup>1</sup> .....	288	80	208	0	27.8	72.2	0
Czechoslovakia: Prague.....	445	151	294	0	33.9	66.1	0
Austria: Vienna.....	321	185	136	0	57.6	42.4	0
All European countries.....	17,107	8,119	8,976	12	47.5	52.4	.1

<sup>1</sup>Closed Aug. 31, 1932.



TABLE 10.—Number and percentage of quota and nonquota applicants examined who were notified for different classes of disabilities during the fiscal year 1933

Country	Quota					Nonquota				
	Total number quota applicants examined	Number notified for—		Percentage of total examined who were notified for—		Total number non-quota applicants examined	Number notified for—		Percentage of total examined who were notified for—	
		Class A conditions	Class B conditions	Class A conditions	Class B conditions		Class A conditions	Class B conditions	Class A conditions	Class B conditions
WESTERN HEMISPHERE										
Cuba.....	319	39	39	12.2	12.2	666	51	51	7.7	7.7
Canada.....	1,925	15	367	.8	19.0	5,188	34	953	.7	18.3
All countries, Western Hemisphere.....	2,244	54	406	2.4	18.0	5,854	85	1,004	1.4	17.1
EUROPE										
Belgium.....	153	2	31	1.3	20.3	141	2	23	1.4	16.3
England.....	889	8	172	.9	19.3	954	3	161	.3	16.8
Irish Free State.....	234	0	52	0	22.2	332	4	77	1.2	23.2
Northern Ireland.....	150	3	41	2.0	27.3	98	2	33	2.0	33.6
Scotland.....	429	8	67	1.9	15.6	491	4	62	.8	12.6
Germany.....	2,155	16	483	.7	22.4	1,092	18	210	1.6	19.2
Holland.....	342	1	48	.3	14.0	122	1	15	.8	12.3
Poland.....	1,415	36	350	2.5	24.7	1,101	13	173	1.2	15.7
Denmark.....	218	0	49	0	22.5	176	0	34	0	19.3
Norway.....	210	4	37	1.9	17.6	227	0	32	0	14.1
Sweden.....	213	3	8	1.4	3.8	266	0	13	0	4.9
Italy.....	1,375	50	662	3.6	48.1	3,546	210	578	5.8	16.3
Czechoslovakia.....	151	3	48	2.0	31.8	294	3	44	1.0	15.0
Austria.....	185	3	38	1.6	20.5	136	6	29	4.4	14.0
All European countries.....	8,119	137	2,086	1.7	25.7	8,976	266	1,484	2.9	16.5

TABLE 11.—Percentage distribution of total quota and nonquota applicants of each sex examined who were notified for different classes of disabilities during the fiscal year 1933

Country	Quota				Nonquota			
	Male		Female		Male		Female	
	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B
WESTERN HEMISPHERE								
Cuba.....	12.0	9.3	12.7	19.1	9.9	7.9	4.9	7.3
Canada.....	.5	17.8	1.2	20.9	.9	18.4	.4	18.3
All countries, Western Hemisphere.....	2.4	16.4	2.5	20.7	2.1	16.9	.8	17.3
EUROPE								
Belgium.....	0	22.2	3.2	17.5	0	12.5	2.6	19.5
England.....	1.1	19.6	.8	19.1	.7	16.1	0	17.5
Irish Free State.....	0	19.8	0	23.5	3.4	20.7	.4	24.1
Northern Ireland.....	0	27.1	2.9	27.4	0	28.2	3.4	37.3
Scotland.....	2.7	14.4	1.4	16.2	.5	16.5	1.0	9.9
Germany.....	.5	21.2	.9	23.3	2.2	18.2	1.3	20.0
Holland.....	.5	15.4	0	12.5	0	10.1	1.9	15.1
Poland.....	2.5	24.7	2.6	24.8	.8	16.3	1.6	15.1
Denmark.....	0	21.2	0	23.8	0	22.2	0	16.3
Norway.....	.9	10.5	2.8	24.7	0	11.4	0	16.4
Sweden.....	1.8	1.8	1.0	6.1	0	5.8	0	3.9
Italy.....	2.8	42.1	4.3	53.4	4.9	16.1	6.6	16.5
Czechoslovakia.....	3.3	20.0	1.1	39.5	1.5	15.4	.7	14.5
Austria.....	2.1	13.6	1.1	27.7	2.0	15.7	5.9	24.7
All European countries.....	1.5	23.7	1.8	27.3	2.5	16.1	3.5	16.9

TABLE 12.—*Distribution according to sex of applicants for immigration visas who were medically examined and notified for disabilities during the fiscal year 1933*

Country and consular office	Number of each sex examined		Percentage of each sex examined		Percentage of males notified for—		Percentage of females notified for—	
	Male	Female	Male	Female	Class A conditions	Class B conditions	Class A conditions	Class B conditions
WESTERN HEMISPHERE								
Cuba: Habana.....	608	379	61.6	38.4	10.5	8.3	6.8	10.3
Canada, total.....	4,357	4,092	51.6	48.4	.8	15.4	.6	17.7
Montreal.....	1,628	1,537	51.4	48.6	.5	18.5	.3	23.4
Quebec.....	157	180	46.6	53.4	0	14.0	0	22.2
Toronto.....	890	753	54.2	45.8	1.2	3.0	1.5	4.1
Vancouver.....	247	297	45.4	54.6	1.2	14.0	0	8.4
Windsor.....	647	702	48.0	52.0	.5	21.1	1.0	20.5
Winnipeg.....	668	467	58.8	41.2	.9	14.9	0	17.3
Yarmouth.....	120	156	43.5	56.5	1.6	41.6	.6	26.9
All countries, Western Hemisphere.....	4,965	4,471	52.6	47.4	1.9	14.6	1.1	17.1
EUROPE								
Belgium: Antwerp.....	154	140	52.4	47.6	0	18.1	2.9	18.6
England, total.....	807	1,036						
Liverpool <sup>1</sup> .....	79	98	44.6	55.4	2.5	29.0	2.0	34.6
London.....	701	914	43.4	56.6	.6	16.3	.2	16.7
Southampton <sup>1</sup> .....	27	24	52.9	47.1	3.7	22.2	0	12.5
Irish Free State: Dublin.....	168	398	29.7	70.3	1.8	20.2	.3	23.9
Northern Ireland: Belfast.....	87	161	35.1	64.9	0	27.6	3.1	31.1
Scotland: Glasgow.....	347	579	37.5	62.5	1.4	16.1	1.2	13.6
Germany, total.....	1,392	1,857						
Berlin.....	544	666	44.9	55.1	1.1	27.8	.7	24.9
Bremen <sup>1</sup> .....	31	41	43.0	57.0	0	12.9	2.4	9.7
Cologne <sup>1</sup> .....	53	78	40.5	59.5	0	9.4	0	20.5
Hamburg.....	351	408	46.2	53.8	.8	12.2	1.2	16.2
Stuttgart.....	413	664	38.3	61.7	1.5	19.1	1.2	24.1
Holland: Rotterdam.....	251	215	53.8	46.2	.4	13.9	.4	13.0
Poland: Warsaw.....	1,216	1,302	48.3	51.7	1.7	21.0	2.1	20.5
Denmark: Copenhagen.....	203	191	51.5	48.5	0	21.7	0	20.4
Norway, total.....	210	227						
Bergen <sup>1</sup> .....	9	13	40.9	59.1	0	33.3	0	38.5
Oslo.....	201	214	48.4	51.6	.5	9.9	1.4	19.2
Sweden, total.....	252	227						
Goteborg.....	127	102	55.5	44.5	.8	3.9	0	3.9
Stockholm.....	125	125	50.0	50.0	.8	4.0	.8	5.6
Italy, total.....	2,113	2,808						
Genoa.....	452	599	43.0	57.0	3.1	27.2	1.8	24.0
Naples.....	1,547	2,035	43.2	56.8	3.9	21.9	6.3	26.9
Palermo <sup>1</sup> .....	114	174	39.6	60.4	13.1	36.8	17.2	24.1
Czechoslovakia: Prague.....	196	249	44.0	56.0	2.0	16.8	.8	23.7
Austria: Vienna.....	146	175	45.5	54.5	2.1	14.4	3.4	26.3
All European countries.....	7,542	9,565	44.0	56.0	2.0	19.8	2.6	21.8

<sup>1</sup> Closed Aug. 31, 1932.

TABLE 13.—*Number and percentage of quota and nonquota applicants of each sex who were refused visas for mental conditions during the fiscal year 1933*

Country	Quota						Nonquota					
	Male			Female			Male			Female		
	Num- ber exam- ined	Num- ber re- fused	Per- cent re- fused	Num- ber exam- ined	Num- ber re- fused	Per- cent re- fused	Num- ber exam- ined	Num- ber re- fused	Per- cent re- fused	Num- ber exam- ined	Num- ber re- fused	Per- cent re- fused
WESTERN HEMISPHERE												
Cuba.....	225	2	0.9	94	0	0	381	3	0.8	285	0	0
Canada.....	1,170	5	.4	755	7	.9	2,321	9	.4	2,867	10	.3
All countries, West- ern Hemisphere.....	1,395	7	.5	849	7	.8	2,702	12	.4	3,152	10	.3
EUROPE												
Belgium.....	90	0	0	63	2	3.2	64	0	0	77	2	2.6
England.....	367	3	.8	522	4	.8	440	2	.5	514	0	0
Irish Free State.....	81	0	0	153	0	0	87	3	3.5	245	1	.4
Northern Ireland.....	48	0	0	102	2	2.0	39	0	0	59	2	3.4
Scotland.....	146	4	2.7	283	4	1.4	199	0	0	292	3	1.0
Germany.....	934	3	.3	1,221	7	.6	457	8	1.8	635	6	.9
Holland.....	182	0	0	160	0	0	69	0	0	53	1	1.9
Poland.....	689	5	.7	726	10	1.4	526	1	.2	575	7	1.2
Denmark.....	113	0	0	105	0	0	90	0	0	86	0	0
Norway.....	105	1	1.0	105	3	2.9	105	0	0	122	0	0
Sweden.....	114	2	1.8	99	0	0	138	0	0	128	0	0
Italy.....	637	4	.6	738	8	1.1	1,476	12	.8	2,070	46	2.2
Czechoslovakia.....	60	0	0	91	0	0	136	2	1.5	158	0	0
Austria.....	95	1	1.1	90	1	1.1	51	0	0	85	1	1.2
All European coun- tries.....	3,661	23	.6	4,458	41	.9	3,877	28	.7	5,099	69	1.4

TABLE 14.—Number and character of the mandatorily excludable conditions notified during the fiscal year 1933

## WESTERN HEMISPHERE

Disease or defect	Cuba: Ha- bana	Canada								Total, all sta- tions
		Mont- real	Que- bec	To- ronto	Van- couver	Wind- sor	Win- nipeg	Yar- mouth	Total	
Class A-I										
Insanity.....	1	1		1		1			3	4
Mentally defective.....	1	1		11					12	13
Epilepsy.....								1	1	1
Feeble-mindedness.....	1					4	1	2	7	8
Constitutional psychopathic inferiority.....	1	4		4		2			10	11
Imbecility.....	1									1
Total, class A-I.....	5	6	0	16	0	7	1	3	33	38
Class A-II										
Trachoma.....	7					1			1	8
Tuberculosis, pulmonary.....	4	2		4	1	1	1		9	13
Ringworm.....					1				1	1
Venereal diseases.....	1	3		2	1	1	4		11	12
Total, class A-II.....	12	5	0	6	3	3	5	0	22	34
Grand total.....	17	11	0	22	3	10	6	3	55	72

## EUROPE

Disease or defect	Belgium	England	Irish Free State	Northern Ireland	Scotland	Germany	Holland	Poland	Denmark	Norway	Sweden	Italy	Czechoslovakia	Austria	Total
Class A-I															
Epilepsy						2									2
Feeble-mindedness	3					6		5				13	1	2	30
Imbecility												1			1
Insanity		1				7	1	1				3			13
Idiocy												1			1
Mentally defective	1	2	3	4	9	8		17				47	1	1	93
Constitutional psychopathic inferiority		6	1		2					4	2	5			20
Senile dementia						1									1
Total, class A-I	4	9	4	4	11	24	1	23	0	4	2	70	2	3	161
Class A-II															
Trachoma		2				1	1	13				164	3	5	189
Tuberculosis, pulmonary				1		5		3				14	1	1	25
Tuberculosis, other forms						2		1				1			4
Venereal diseases						2					1	6			9
Other loathsome contagious diseases					1			9				5			15
Total, class A-II	0	2	0	1	1	10	1	26	0	0	1	190	4	6	242
Grand total	4	11	4	5	12	34	2	49	0	4	3	260	6	9	403

TABLE 15.—*Number and percentage of applicants examined who were notified and refused visas on medical notification for different classes of disabilities during the fiscal year 1933*

Country and consular office	Number notified for—		Percentage of applicants examined notified for—		Number of visas refused for—		Percentage of applicants examined who were refused visas for—	
	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions	Class A conditions	Class B conditions
WESTERN HEMISPHERE								
Cuba: Habana.....	90	90	9.1	9.1	90	29	9.1	2.9
Canada, total.....	56	1,398	.6	16.5	54	705	.6	8.3
Montreal.....	12	664	.3	20.9	11	386	.3	12.2
Quebec.....	0	62	0	18.4	0	31	0	9.2
Toronto.....	22	58	1.3	3.5	22	14	1.3	.9
Vancouver.....	3	60	.6	11.0	2	14	.3	2.6
Windsor.....	10	281	.7	20.8	10	109	.7	8.0
Winnipeg.....	6	181	.5	15.9	6	92	.5	8.1
Yarmouth.....	3	92	1.1	33.3	3	59	1.1	21.3
All countries, Western Hemisphere.....	146	1,488	1.5	15.7	144	734	1.5	7.7
EUROPE								
Belgium: Antwerp.....	4	54	1.3	18.4	4	26	1.3	8.8
England, total.....	11	333	-----	-----	11	99	-----	-----
Liverpool <sup>1</sup> .....	4	57	2.2	32.2	4	17	2.2	9.6
London.....	6	267	.4	16.5	6	81	.4	5.0
Southampton <sup>1</sup> .....	1	9	1.9	17.6	1	1	1.9	1.9
Irish Free State: Dublin.....	4	129	.7	22.8	4	20	.7	3.5
Northern Ireland: Belfast.....	5	74	2.0	29.8	5	37	2.0	14.9
Scotland: Glasgow.....	12	135	1.3	14.6	12	70	1.3	7.6
Germany, total.....	34	694	-----	-----	34	244	-----	-----
Berlin.....	11	317	.9	26.2	11	146	.9	12.1
Bremen <sup>1</sup> .....	1	8	1.4	11.1	1	2	1.4	2.8
Cologne <sup>1</sup> .....	0	21	0	16.0	0	11	0	8.4
Hamburg.....	8	109	1.1	14.4	8	8	1.1	1.1
Stuttgart.....	14	239	1.3	22.2	14	77	1.3	7.1
Holland: Rotterdam.....	2	63	.4	13.5	2	33	.4	7.1
Poland: Warsaw.....	49	523	1.9	20.7	49	178	1.9	7.1
Denmark: Copenhagen.....	0	83	0	21.1	0	29	0	7.4
Norway, total.....	4	69	-----	-----	4	35	-----	-----
Bergen <sup>1</sup> .....	0	8	0	36.3	0	0	0	0
Oslo.....	4	61	.9	14.7	4	35	.9	8.0
Sweden, total.....	3	21	-----	-----	3	9	-----	-----
Goteborg.....	1	9	.4	3.9	1	4	.4	1.8
Stockholm.....	2	12	.8	4.8	2	5	.8	2.0
Italy, total.....	260	1,240	-----	-----	260	273	-----	-----
Genoa.....	25	267	2.4	25.4	25	59	2.4	5.6
Naples.....	190	889	5.3	24.8	190	180	5.3	5.0
Palermo <sup>1</sup> .....	45	84	15.7	29.1	45	34	15.7	11.8
Czechoslovakia: Prague.....	6	92	1.3	20.7	6	23	1.3	5.2
Austria: Vienna.....	9	67	2.8	20.9	9	11	2.8	3.4
All European countries.....	403	3,577	2.4	20.9	403	1,087	2.4	6.3

<sup>1</sup> Closed Aug. 31, 1932.



TABLE 16.—*Percentage distribution of the total quota and nonquota applicants notified for each class of disabilities who were refused visas on medical grounds during the fiscal year 1933*

Country	Quota						Nonquota					
	Number notified		Number refused visas		Percentage of notified cases re-fused visas		Number notified		Number refused visas		Percentage of notified cases re-fused visas	
	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B
WESTERN HEMISPHERE												
Cuba.....	39	39	39	15	100	38.5	51	51	51	14	100	27.5
Canada.....	15	367	15	211	100	57.5	34	953	34	483	100	50.6
All countries, Western Hemisphere.....	54	406	54	226	100	55.6	85	1,004	85	497	100	49.5
EUROPE												
Belgium.....	2	31	2	18	100	58.1	2	23	2	8	100	34.8
England.....	8	172	8	62	100	36.0	3	161	3	37	100	22.9
Irish Free State.....	0	52	0	9	0	17.3	4	77	4	11	100	14.3
Northern Ireland.....	3	41	3	25	100	60.9	2	33	2	12	100	36.3
Scotland.....	8	67	8	34	100	50.7	4	62	4	34	100	54.8
Germany.....	16	483	16	223	100	46.2	18	210	18	21	100	10.0 <sup>a</sup>
Holland.....	1	48	1	30	100	62.5	1	15	1	3	100	20.0 <sup>a</sup>
Poland.....	36	350	36	131	100	37.4	13	173	13	47	100	27.2 <sup>a</sup>
Denmark.....	0	49	0	18	0	36.7	0	34	0	11	0	32.3
Norway.....	4	37	4	25	100	67.5	0	32	0	10	0	31.2
Sweden.....	3	8	3	2	100	25.0	0	13	0	7	0	53.8
Italy.....	50	662	50	130	100	19.6	210	578	210	143	100	24.7
Czechoslovakia.....	3	48	3	13	100	27.1	3	44	3	10	100	22.7
Austria.....	3	38	3	8	100	21.1	6	29	6	3	100	10.4
All European countries.....	137	2,086	137	728	100	34.9	266	1,484	266	357	100	24.0 <sup>a</sup>

TABLE 17.—*Number and percentage of male and female applicants notified for class B disabilities who were refused visas on medical grounds during the fiscal year 1933*

Country and consular office	Number of applicants notified for class B conditions		Number of applicants refused visas for class B conditions		Percentage of applicants notified who were refused visas for class B conditions	
	Male	Female	Male	Female	Male	Female
WESTERN HEMISPHERE						
Cuba: Habana.....	51	39	15	14	29.4	35.9
Canada, total.....	674	724	385	321	57.1	44.3
Montreal.....	303	361	183	203	60.4	56.2
Quebec.....	22	40	14	18	63.6	45.0
Toronto.....	27	31	12	2	44.4	6.4
Vancouver.....	35	25	11	3	31.4	12.0
Windsor.....	137	144	68	41	49.6	28.4
Winnipeg.....	100	81	57	35	57.0	43.2
Yarmouth.....	50	42	40	19	80.0	45.2
All countries, Western Hemisphere.....	725	763	400	335	55.1	43.9
EUROPE						
Belgium: Antwerp.....	28	26	14	12	50.0	46.1
England, total.....	143	190	48	51	-----	-----
Liverpool <sup>1</sup> .....	23	34	7	10	30.4	29.4
London.....	114	153	40	41	35.1	26.8
Southampton <sup>1</sup> .....	6	3	1	0	16.7	0
Irish Free State: Dublin.....	34	95	6	14	17.6	14.7
Northern Ireland: Belfast.....	24	50	16	21	66.6	42.0
Scotland: Glasgow.....	56	79	31	39	55.4	49.4
Germany, total.....	282	412	124	120	-----	-----
Berlin.....	151	166	89	57	58.9	34.3
Bremen <sup>1</sup> .....	4	4	1	1	25.0	25.0
Cologne <sup>1</sup> .....	5	16	3	8	60.0	50.0
Hamburg.....	43	66	5	3	11.6	4.5
Stuttgart.....	79	160	26	51	32.9	31.9
Holland: Rotterdam.....	35	28	20	13	57.1	46.4
Poland: Warsaw.....	256	267	109	69	42.6	25.8
Denmark: Copenhagen.....	44	39	20	9	45.4	23.1
Norway, total.....	23	46	8	27	-----	-----
Bergen <sup>1</sup> .....	3	5	0	0	0	0
Oslo.....	20	41	8	27	40.0	65.8
Sweden, total.....	10	11	5	4	-----	-----
Goteborg.....	5	4	2	2	40.0	50.0
Stockholm.....	5	7	3	2	60.0	28.6
Italy, total.....	505	735	151	122	-----	-----
Genoa.....	123	144	33	26	26.8	18.0
Naples.....	340	549	98	82	28.8	14.9
Palermo <sup>1</sup> .....	42	42	20	14	47.6	33.3
Czechoslovakia: Prague.....	33	59	11	12	33.3	20.3
Austria: Vienna.....	21	46	7	4	33.3	8.7
All European countries.....	1,494	2,083	570	517	38.2	24.8

<sup>1</sup> Closed Aug. 31, 1932.

TABLE 18.—*Summary of medical inspection of aliens, fiscal year 1933*

## MARITIME STATIONS

## GROUP I.—ALIEN PASSENGERS NOT EXAMINED ABROAD, EXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed	Certified on arrival				Total certified
				A-I	A-II	B	C	
First.....	49,781	992	49,578	4	4	170	25	203
Second.....	23,311	630	23,149	3	4	145	10	162
Third.....	96,202	4,746	95,008	18	64	985	127	1,194
Stowaways.....	282	155	260	1	8	5	8	22
Warrant cases.....	7,525	3,063	6,937	29	137	271	151	588
Total.....	177,101	9,586	174,932	55	217	1,576	321	2,169

## GROUP II.—ALIEN PASSENGERS EXAMINED ABROAD, REEXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed abroad	Passed on arrival	Certified on arrival (condition noted abroad)					Certified on arrival (condition not noted abroad)					Total certified
					A-I	A-II	B	C	Number certified	A-I	A-II	B	C	Number certified	
First.....	1,286	101	1,134	1,128	1	0	150	1	152	1	0	3	2	6	158
Second.....	2,153	27	1,631	1,631	0	0	522	0	522	0	0	0	0	0	522
Third.....	5,659	111	3,868	3,862	0	0	1,790	1	1,791	1	0	3	2	6	1,797
Total.....	9,098	239	6,633	6,621	1	0	2,462	2	2,465	2	0	6	4	12	2,477

## GROUP III.—ALIEN SEAMEN EXAMINED ON ARRIVAL

	Total examined	Intensively examined	Passed	Certified				Total certified
				A-I	A-II	B	C	
Alien crew.....	804,798	241,650	803,810	21	434	392	141	988
Workaways.....	230	32	227	0	3	0	0	3
Total.....	805,028	241,682	804,037	21	437	392	141	991

## CANADIAN AND MEXICAN BORDER STATIONS

## GROUP I.—ALIEN PASSENGERS NOT EXAMINED ABROAD, EXAMINED ON ARRIVAL

Class	Total examined	Intensively examined	Passed	Certified on arrival				Total certified
				A-I	A-II	B	C	
Statistical, making permanent entry (bona fide immigrants).....	31,693	25,511	30,175	96	78	963	381	1,518
Statistical, making temporary entry.....	21,590	8,515	19,479	103	89	1,593	326	2,111
Nonstatistical, making entry (local crossers, etc.).....	151,975	39,478	147,464	113	471	2,893	1,034	4,511
Warrant cases.....	5,688	5,674	4,631	66	332	572	87	1,057
Total.....	210,946	79,178	201,749	378	970	6,021	1,828	9,197

TABLE 18.—*Summary of medical inspection of aliens, fiscal year 1933—Continued*

## GROUP II.—ALIEN PASSENGERS EXAMINED ABROAD, REEXAMINED ON ARRIVAL

Class	Total exam- ined	Inten- sively exam- ined	Passed abroad	Passed on ar- rival	Certified on arrival (condition noted abroad)					Certified on arrival (condition not noted abroad)					Total certi- fied
					A-I	A-II	B	C	Num- ber certi- fied	A-I	A-II	B	C	Num- ber certi- fied	
Statistical, making permanent entry (bona fide immi- grants)-----	805	801	803	745	0	0	2	0	2	2	0	54	2	58	60
Statistical, making temporary entry-----	621	621	621	585	0	0	0	0	0	0	0	36	0	36	36
Nonstatistical, mak- ing entry (local crossers, etc.)-----	3	3	2	0	0	0	0	1	1	0	0	0	2	2	3
Total-----	1,429	1,425	1,426	1,330	0	0	2	1	3	2	0	90	4	96	99

## DIVISION OF SANITARY REPORTS AND STATISTICS

In charge of Asst. Surg. Gen. R. C. WILLIAMS

The activities of the Division of Sanitary Reports and Statistics were curtailed during the fiscal year because of the economic emergency.

Reports of the prevalence of diseases dangerous to the public health were received throughout the year from the United States and foreign countries, and these reports were compiled, tabulated, or abstracted and made available to health officers and others who are charged with the duty of protecting the health of the public.

### MORBIDITY AND MORTALITY REPORTS

Four States were added to the number of those which have qualified for admission to the morbidity reporting area. On June 30, 1933, 29 States and the District of Columbia had secured the required rating. Lack of funds has prevented the vigorous pressing of work in securing reports in the area, but there is a steady improvement in the reports, and it is apparent that something is being accomplished.

### CURRENT PREVALENCE OF COMMUNICABLE DISEASES

Current reports of cases made to the Public Health Service were compiled by 4-week periods and published in the Public Health Reports with comparisons with corresponding periods of preceding years.

### CURRENT STATE MORTALITY STATISTICS

The collection of statistics of deaths from communicable diseases and other important causes of death from States which can supply the information currently was continued during the fiscal year. The quarterly publication of these statistics was discontinued, but tables showing the death rates by States for the years 1928 to 1932, inclusive, were compiled and published.

### COLLABORATING AND ASSISTANT COLLABORATING EPIDEMIOLOGISTS

The Public Health Service continued its plan of appointing collaborating and assistant collaborating epidemiologists in State and local health departments to aid in collecting and forwarding to the Public Health Service information as to outbreaks and the prevalence of communicable diseases.

### TELEGRAPHIC REPORTS

In August 1932, Rocky Mountain spotted fever was added to the list of diseases reported by State health officers by telegraph each week. The figures given in the telegrams were tabulated, mimeo-



graphed, and mailed promptly to State health officers. These figures were also published weekly in the Public Health Reports with the figures for the corresponding week of the preceding year.

#### MONTHLY STATE MORBIDITY REPORTS

Health departments of all of the States except Kentucky and Utah sent to the Public Health Service monthly tabulations of the numbers of cases of notifiable diseases which had been reported in their jurisdictions. A brief summary of the statistics was published in the Public Health Reports, and the reports were compiled and filed for reference in the division.

#### ANNUAL STATE MORBIDITY REPORTS

The annual summaries of notifiable diseases in States for the years 1930 and 1931, the printing of which had been delayed owing to lack of funds, were retabulated to reduce the expense of printing and were issued during the fiscal year 1933.

#### WEEKLY AND ANNUAL CITY REPORTS

Weekly reports of morbidity and mortality of 18 diseases were received from 700 cities of 10,000 population or over in the United States. The reports from a selected list of 121 cities were published weekly with the idea of showing currently a cross section of the urban morbidity throughout the country. Data from cities not on this list are kept for reference. Annual summaries of the morbidity and mortality of 25 diseases for the calendar year 1932 were received from 716 cities in the United States. Owing to lack of funds, these data have not been published.

#### FOREIGN REPORTS

Reports of the prevalence of quarantinable and other diseases in foreign countries were received during the fiscal year from officers of the Public Health Service stationed abroad, from consular officers of the United States, international health organizations, foreign governments, and other sources. In accordance with the provisions of law, these reports were tabulated or abstracted and published.

#### INTERNATIONAL EXCHANGE OF SANITARY INFORMATION

In accordance with the provisions of international sanitary conventions to which the United States is a party, the countries signatory thereto have been notified through the Department of State of cases of quarantinable diseases and the progress of epidemics in the United States and its dependencies. There has been a constant exchange of sanitary information between the Public Health Service and the Pan American Sanitary Bureau and, by telegraph and mail, with the International Office of Public Hygiene and the health section of the League of Nations.

## PREVALENCE OF COMMUNICABLE DISEASES DURING THE CALENDAR YEAR 1932

Reports to the Public Health Service for the calendar year 1932 indicate a continuation of the generally good health conditions in the United States which have been noted for several years.

The accompanying tables give a comparison of the numbers of cases of the principal communicable diseases and deaths from these diseases in the United States for the calendar years 1930, 1931, and 1932:

## CASES

Disease	Number of States <sup>1</sup>	Aggregate population (in thousands)			Cases			Cases per 100,000 population		
		1930	1931	1932	1930	1931	1932	1930	1931	1932
Chicken pox.....	42	107,317	108,106	108,781	194,706	200,985	201,161	181.4	185.9	184.9
Diphtheria.....	46	119,048	119,912	120,651	64,421	68,012	57,460	54.1	56.7	47.6
Influenza.....	46	119,048	119,912	120,651	-----	-----	-----	-----	-----	-----
Malaria.....	45	112,380	113,198	113,898	-----	-----	-----	-----	-----	-----
Measles.....	46	119,048	119,912	120,651	402,821	457,634	395,807	338.4	381.6	328.1
Meningococcus meningitis..	35	102,471	103,225	103,874	7,206	4,883	2,893	7.0	4.7	2.8
Mumps.....	36	80,209	80,777	81,263	92,691	96,089	89,130	115.6	119.0	109.7
Pellagra.....	44	99,737	100,442	101,046	-----	-----	-----	-----	-----	-----
Pneumonia (all forms).....	44	109,057	109,784	110,407	-----	-----	-----	-----	-----	-----
Poliomyelitis.....	39	100,887	101,625	102,257	8,475	15,673	3,568	8.4	15.4	3.5
Scarlet fever.....	46	119,048	119,912	120,651	168,168	192,114	206,312	141.3	160.2	171.0
Smallpox.....	46	119,048	119,912	120,651	46,560	28,755	10,887	39.1	24.0	9.0
Tuberculosis (all forms).....	45	118,610	119,469	120,203	-----	-----	-----	-----	-----	-----
Tuberculosis (respiratory system).....	39	104,250	105,015	105,668	-----	-----	-----	-----	-----	-----
Typhoid fever and paratyphoid fever.....	46	119,048	119,912	120,651	26,301	25,761	26,013	22.1	21.5	21.6
Whooping cough.....	46	119,048	119,912	120,651	159,053	165,495	210,456	133.6	138.0	174.4

## DEATHS

Diseases	Deaths			Deaths per 100,000 population			Cases reported for each death registered		
	1930	1931	1932	1930	1931	1932	1930	1931	1932
Chicken pox.....	104	129	92	0.1	0.1	0.1	1,872	1,558	2,187
Diphtheria.....	5,842	5,881	5,750	4.9	4.9	4.8	11	12	10
Influenza.....	22,311	30,989	36,310	18.7	25.8	30.1	-----	-----	-----
Malaria.....	3,296	2,497	2,566	2.9	2.2	2.3	-----	-----	-----
Measles.....	3,399	3,076	1,847	2.9	2.6	1.5	119	149	214
Meningococcus meningitis..	3,253	2,330	1,310	3.2	2.3	1.3	2	2	2
Mumps.....	49	61	50	.1	.1	.1	1,892	1,575	1,783
Pellagra.....	7,074	5,773	4,091	7.1	5.7	4.0	-----	-----	-----
Pneumonia (all forms).....	91,212	92,457	89,452	83.6	84.2	81.0	-----	-----	-----
Poliomyelitis.....	1,147	1,908	650	1.1	1.9	.6	7	8	5
Scarlet fever.....	2,146	2,423	2,455	1.8	2.0	2.0	78	79	84
Smallpox.....	164	96	50	.1	.1	(2)	284	300	218
Tuberculosis (all forms).....	82,095	79,305	73,733	69.2	66.4	61.3	-----	-----	-----
Tuberculosis (respiratory system).....	65,852	63,918	59,758	63.2	60.9	56.6	-----	-----	-----
Typhoid fever and paratyphoid fever.....	5,852	5,466	4,613	4.9	4.6	3.8	4	5	6
Whooping cough.....	5,373	4,365	5,016	4.5	3.6	4.2	30	38	42

<sup>1</sup> In addition to the number of States given, the District of Columbia is also included.

<sup>2</sup> Less than 0.1 per 100,000 population.

During the calendar year 1932, 420 cases of cholera were reported in the Philippine Islands. Four plague-infected rats and two plague-infected ground squirrels were found in California. In the Territory of Hawaii 6 cases of plague with 5 deaths were reported and 24 plague-infected rats were found. Yellow fever did not appear in the United States during 1932.

## SANITARY LEGISLATION AND COURT DECISIONS

*Laws, ordinances, and regulations.*—During the period 1911–28, the Public Health Service published annual compilations containing the text of State health laws and regulations. Owing to reduced printing funds and to the increasing volume of the laws and regulations, it was found necessary to present the material in a briefer and more economical form. A record of the laws and regulations for 1929 and 1930 was, therefore, prepared in the form of citations arranged alphabetically according to subject matter, and issued as Supplement No. 99 during the fiscal year.

Another publication issued during the year was Supplement No. 100, containing an analysis of the more important provisions of the State laws and regulations on morbidity reporting.

The collection of public health ordinances and regulations adopted by cities of over 10,000 population was continued, there being collected during the year those ordinances and regulations which were adopted during 1932.

*Court decisions.*—Continuing a practice of many years' standing, current digests of decisions of State and Federal courts of last resort were searched for decisions bearing on public health, and abstracts of such decisions were prepared and published in the weekly Public Health Reports.

## PUBLICATIONS ISSUED BY THE DIVISION

The Public Health Reports was issued by the division each week during the year. There were 53 issues (vol. 47, pt. 2, and vol. 48, pt. 1), which contained 1,762 pages of text and tables, exclusive of title pages and tables of contents, as compared with 3,008 pages in the fiscal year 1932, 3,285 in 1931, and 3,143 in 1930. This reduction in size was necessitated by a reduction in printing funds and was accomplished by suspending the publication of certain statistical tables, by condensing other tables, and by reducing the length of text articles through extensive revision editorially and by the authors. The mailing lists were carefully scrutinized and revised, resulting in a reduction of several thousand copies in the number issued.

During the year, 43 important articles published in the Public Health Reports were issued in separate form as reprints, providing for a more extensive and economical distribution to persons interested in the various subjects and also providing for sale editions by the Superintendent of Documents. The number of such reprints in 1932 was 35, while 97 were issued in 1931 and 94 in 1930.

In connection with cooperative work with official and unofficial organizations designed to stimulate interest in community Negro health activities, and to aid community leaders in their efforts directed toward important local health problems, including "clean-up" campaigns and the general dissemination of information relating to individual hygiene and community sanitation, the division issued the National Negro Health Week Bulletin and Poster for 1933.

## NEGRO HEALTH WORK

In keeping with the practice of the Public Health Service to aid when possible public health activities directed to the control of special health problems, it has assisted the work of the National Negro

Health Week and the National Negro Health Movement. The campaign for the spring of 1933 undertook to emphasize the immediate community problems produced or exacerbated by the economic depression. These activities reached directly over 500,000 persons and indirectly, it is estimated, more than a million adults and children. Nearly 500 clinics supplied examination and treatment personnel and facilities for 50,000 persons of all ages. Lectures reached approximately 250,000, visual education—motion pictures, exhibits, and plays—150,000, and over 150,000 pieces of health literature were made available.

The National Negro Health Movement, in addition to the extensive program connected with the National Negro Health Week, rendered 104 days of field service to 46 communities in 8 States, with lectures and conference attendance of more than 35,000 persons, motion picture audiences of over 12,000 people, the distribution of 10,000 special health publications, and the display of several health exhibits.

#### PUBLICATIONS DISTRIBUTED AND EXHIBITS PREPARED

During the fiscal year, 66 new publications were distributed by the division, as compared with 68 during the preceding year. A total distribution of 130,802 copies of new publications and of editions of previously published documents was made. Of these, 80,751 were sent in response to individual requests for information and 50,051 copies were distributed to mailing lists.

In response to 30 requests for the loan of stereopticon slides 1,938 slides were loaned to universities, health officers, public health lecturers, officials of the Public Health Service, and others. Two new sets of slides were added during the year.

During the fiscal year the appropriation for exhibits relating to communicable diseases was considerably reduced. However, an extensive exhibit on poliomyelitis was prepared, in cooperation with the Committee on Scientific Exhibits of the American Medical Association, for display at the annual meeting of the association, and several other exhibits were displayed. An extensive exhibit was also prepared for display at the Century of Progress Exposition at Chicago, for which an allotment of funds was received under the act of February 8, 1932.

The following is a list of publications distributed by the division during the fiscal year:

#### REPRINTS FROM THE PUBLIC HEALTH REPORTS

1513. Agglutinin Absorption in Undulant Fever (Brucellosis). By Edward Francis. October 9, 1931. 21 pages.
1514. Sickness Among Male Industrial Employees in the Second Quarter of 1931. By Dean K. Brundage. October 16, 1931. 4 pages.
1515. Mosquitoes Transported by Airplanes. Staining Method Used in Determining Their Importation. By T. H. D. Griffiths and J. J. Griffiths. November 20, 1931. 8 pages.
1516. Pathology of the Eastern Type of Rocky Mountain Spotted Fever. By R. D. Lillie. November 27, 1931. 20 pages.
1518. The Fumigation of Vessels. A Symposium. By C. L. Williams, B. E. Holsendorf, and J. R. Ridlon. July 3, 10, 17, 24, 31; August 14, 28; December 11, 1931. 74 pages.
1519. Scarlet-Fever Streptococcus Antitoxin in the Treatment of Scarlet Fever. By M. V. Veldee, F. E. Stevenson, and A. Graeme Mitchell. December 18, 1931. 28 pages.

1521. City Health Officers, 1931. Directory of Those in Cities of 10,000 or More Population. December 4, 1931. 17 pages.
1522. State and Insular Health Authorities, 1931. Directory, with Data as to Appropriations and Publications. December 4, 1931. 24 pages.
1523. Whole-Time County Health Officers, 1931. December 18, 1931. 9 pages.
1524. Typhus Fever: Typhus Virus in Feces of Infected Fleas (*Xenopsylla cheopis*) and Duration of Infectivity of Fleas. By E. T. Ceder, R. E. Dyer, A. Rumreich, and L. F. Badger. December 25, 1931. 9 pages.
1525. Typhus Fever. Transmission of Endemic Typhus by Rubbing Either Crushed Infected Fleas or Infected Flea Feces into Wounds. By R. E. Dyer, E. T. Ceder, W. G. Workman, A. Rumreich, and L. F. Badger. January 15, 1932. 3 pages.
1526. Public Health Service Publications. A List of Publications Issued During the Period July–December 1931. January 29, 1932. 4 pages.
1527. The Health Officer's Viewpoint of Child Hygiene. By Taliaferro Clark. February 26, 1932. 12 pages.
1528. The Impinger Dust Sampling Apparatus as Used by the United States Public Health Service. By Leonard Greenburg and J. J. Bloomfield. March 18, 1932. 22 pages.
1529. Rat Infestation Inspection of Vessels. By C. L. Williams. April 1, 1932. 35 pages.
1530. Relative Incidence of Typhoid Fever in Urban and Rural Areas of Tennessee. By D. F. Milam and Elbridge Sibley. April 8, 1932. 6 pages.
1531. Typhus Fever. The Experimental Transmission of Endemic Typhus Fever of the United States by the Rat Flea (*Ceratophyllus fasciatus*). By R. E. Dyer, W. G. Workman, L. F. Badger, and A. Rumreich. April 22, 1932. 2 pages.
1532. Typhus Fever. The Multiplication of the Virus of Endemic Typhus in the Rat Flea (*Xenopsylla cheopis*). By R. E. Dyer, W. G. Workman, E. T. Ceder, L. F. Badger, and A. Rumreich. April 29, 1932. 8 pages.
1533. The Standardization of Scarlet Fever Streptococcus Antitoxin. A Method Employing the Ear of the White Rabbit. By M. V. Veldee. May 6, 1932. 14 pages.
1534. The Action of Colloidal Paris Green on the Larvae of *Culex Apicalis*. A Preliminary Report. By H. G. Grant, Barclay M. Newman, and Pierce D. Wood. June 3, 1932. 9 pages.
1535. Duration of Viability and Virulence of *Bacillus Pestis*. By Edward Francis. June 10, 1932. 8 pages.
1536. The Preparation of a Vaccine from Fleas Infected with Endemic Typhus. By R. E. Dyer, W. G. Workman, A. Rumreich, and L. F. Badger. June 17, 1932. 4 pages.
1537. Some Instances of Rapid Rat Infestation of Vessels. By C. L. Williams. June 17, 1932. 5 pages.
1538. Acute Respiratory Diseases in University of Michigan Students, 1917–31. Incidence of Cases Attended by University Physicians Among Students at the University Health Service. By Warren E. Forsythe. June 24, 1932. 12 pages.
1539. Epidemic of Mild Dysentery-Like Disease in Cattaraugus County, N.Y., Summer of 1930. By Dorothy G. Wiehl and Mary Gover. July 1, 1932. 8 pages.
1540. Observations on the Agglutination of *Proteus X* Organisms in Rocky Mountain Spotted Fever. By Gordon E. Davis and R. R. Parker. July 15, 1932. 12 pages.
1541. Postvaccination Encephalitis. With Special Reference to Prevention. By Charles Armstrong. July 22, 1932. 16 pages.
1542. Report of Committee on Milk. Conference of State and Provincial Health Authorities, June 2, 1932. August 12, 1932. 4 pages.
1543. The Metamorphoses of Streptococci into Spore-Bearing Rods and into Filterable Forms. By Alice C. Evans. August 19, 1932. 16 pages.
1544. Relation of Oxidation to Proteolysis in Malignant Tumors. By Carl Voegtlin and Mary E. Maver. March 25, 1932. 16 pages.
1545. The Incidence and Time Distribution of Common Colds in Several Groups Kept Under Continuous Observation. By W. H. Frost and Mary Gover. September 2, 1932. 27 pages.
1546. Studies on Immunity Induced by Mouse Sarcoma 180. By H. B. Ander-vont. September 9, 1932. 19 pages.
1547. Biological Products. Establishments Licensed for the Propagation and Sale of Viruses, Serums, Toxins, and Analogous Products. September 9, 1932. 6 pages.



1548. Etiology of Trachoma with Reference to Relationship of Bacterium Granulosis (Noguchi) to the Disease. By Ida A. Bengtson. September 16, 1932. 22 pages.
1549. Do Children Who Drink Raw Milk Thrive Better Than Children Who Drink Heated Milk? By Leslie C. Frank, F. A. Clark, W. H. Haskell, M. M. Miller, F. J. Moss, and R. C. Thomas. September 23, 1932. 10 pages.
1550. Public Health Education. The Functions of the University and of the Private Foundation. By John Sundwall. October 7, 1932. 16 pages.
1551. An Epidemic of Motor Neuritis in Cincinnati, Ohio, Due to Drinking Adulterated Jamaica Ginger. History, Symptomatology, and Clinical Report. By Charles E. Kiely, Murray L. Rich, A. R. Vonderahe, T. J. LeBlanc, and W. E. Brown. October 14, 1932. 25 pages.
1552. Public Health Service Publications. A List of Publications Issued During the Period January-June, 1932. October 21, 1932. 2 pages.
1553. Excess Mortality from Causes Other than Influenza and Pneumonia During Influenza Epidemics. By Selwyn D. Collins. November 11, 1932. 21 pages.
1554. Plasmochin in Malaria Prevention. Experiments in Alabama. By J. N. Baker and D. G. Gill. December 2, 1932. 6 pages.
1555. Recent Court Decisions on Milk Control. By James A. Tobey. December 2, 1932. 8 pages.
1556. Standardization of Morbidity Reporting and Development of the Morbidity Reporting Area. By R. C. Williams. December 9, 1932. 16 pages.
1557. Rocky Mountain Spotted Fever (Eastern Type). Virus Recovered from the Dog Tick *Dermacentor variabilis* Found in Nature. By L. F. Badger. December 30, 1932. 5 pages.
1558. Endemic Typhus Fever Virus Recovered from Wild Rat Trapped at Typhus Focus in the United States. By R. E. Dyer, W. G. Workman, and A. Rumreich. December 30, 1932. 5 pages.
1559. Trends of Health in the United States. By Rollo H. Britten. January 13, 1933. 15 pages.
1560. The Quantitative Determination of Quartz ("Free Silica") in Dusts. By Adolph Knopf. February 24, 1933. 8 pages.
1561. Seasonal Variation of Average Growth in Weight of Elementary School Children. By Carroll E. Palmer. March 3, 1933. 23 pages.
1563. Causes of Illness in 9,000 Families Based on Nation-Wide Periodic Censuses, 1928-1931. By Selwyn D. Collins. March 24, 1933. 26 pages.
1564. Production of a Malignant Growth in a Guinea Pig. By T. J. Glover and J. L. Engle. March 31, 1933. 4 pages.
1567. The Prevention of Rocky Mountain Spotted Fever. May 5, 1933. 3 pages.
1568. Mortality in Certain States During 1932, with Comparative Data for Recent Years. May 5, 1933. 9 pages.

## SUPPLEMENTS

99. Citations to Public Health Laws and Regulations, 1929-1930. 1933. 30 pages.
100. Laws and Regulations Relating to Morbidity Reporting. Prepared by William Fowler. 1933. 29 pages.
103. Chemistry of the Opium Alkaloids. By Lyndon F. Small and Robert E. Lutz. 1932. 375 pages.
104. The Notifiable Diseases. Prevalence in States, 1930. 1932. 16 pages.
105. The Notifiable Diseases. Prevalence in States, 1931. 1932. 14 pages.

## PUBLIC HEALTH BULLETINS

202. Frequency of Pneumonia Among Iron and Steel Workers. By Dean K. Brundage, Albert E. Russell, Roy R. Jones, J. J. Bloomfield, and Lewis R. Thompson. 1932. 51 pages.
203. A Study of the Pollution and Natural Purification of the Upper Mississippi River. Surveys and Laboratory Studies. By H. R. Crohurst. 1932. 113 pages.

204. A Study of the Pollution and Natural Purification of the Ohio River. IV. A Resurvey of the Ohio River Between Cincinnati, Ohio, and Louisville, Ky., Including a Discussion of the Effects of Canalization and Changes in Sanitary Conditions Since 1914-16. By H. R. Crohurst. 1933. 111 pages.

## NATIONAL INSTITUTE OF HEALTH BULLETINS

160. Further Studies on the Pharmacology of Certain Phenol Esters with Special Reference to the Relation of Chemical Constitution and Physiologic Action. By Maurice I. Smith, E. W. Engel, and E. F. Stohman. The Histopathology of Some Neurotoxic Phenol Esters. By R. D. Lillie and Maurice I. Smith. August 1932. 69 pages.
161. I. The Pathology of Psittacosis in Man. II. The Pathology of Psittacosis in Animals and the Distribution of *Rickettsia Psittaci* in the Tissues of Man and Animals. By R. D. Lillie. May 1933. 66 pages; 27 plates.

## ANNUAL REPORT

Annual Report of the Surgeon General of the United States Public Health Service for the Fiscal Year 1932. 199 pages.

## MISCELLANEOUS PUBLICATION

11. Official List of Commissioned and Other Officers of the United States Public Health Service; Also a List of All Stations of the Service. January 1, 1933. 61 pages.

## UNNUMBERED PUBLICATIONS

Index to Public Health Reports, Volume 47, Part 1, January-June 1932. 30 pages.

Index to Public Health Reports, Vol. 47, Part 2, July-December 1932. 23 pages.

National Negro Health Week Program. This pamphlet is published annually, usually about the middle of March, for community leaders in an effort to suggest ways and means by which interested individuals and organizations may be organized for a concerted and effective attack upon the community's disease problems. Nineteenth Annual Observance. 1933. 8 pages.

National Negro Health Week Poster. Nineteenth Annual Observance. 1933.

## DIVISION OF MARINE HOSPITALS AND RELIEF

In charge of Asst. Surg. Gen. F. C. SMITH

Out-patient and hospital treatment is furnished to American seamen and other legal beneficiaries in 154 ports of the United States and the possessions. Contracts are maintained with 183 hospitals located chiefly in ports not served by the 25 marine hospitals. At the close of the year 3,959 patients remained in hospitals, including 154 insane in St. Elizabeths Hospital and 370 at the National Leper Home. The policy of constructing and maintaining marine hospitals only in large ports or where satisfactory hospital care cannot otherwise be procured was established many years ago. The present number of marine hospitals, exclusive of the Leper Home, is identical with that in 1860 although locations have varied with shipping conditions. The marine hospital at Port Townsend, Wash., was closed on February 1, 1933, and the new one at Seattle was opened at the same time. When construction, for which plans and specifications have been finished, is authorized, the building program will be complete.

The volume of work, which for 135 years has faithfully reflected the activities of the American merchant marine, was slightly increased for old-line beneficiaries, and on June 30, 1933, there were 160 more such patients in hospitals than a year ago. Bills have been introduced to liberalize eligibility and include new classes of beneficiaries but none such has recently been passed by the Congress. Owners of small vessels not previously documented have obtained registration chiefly for the purpose of enabling the crews to become eligible for treatment. Members of the Civilian Conservation Corps are admitted as pay patients. For a complete statement of relief furnished at each station and the customary collateral functions performed by the marine hospitals for the Army, Navy, Civil Service Commission, Steamboat Inspection Service, Coast Guard, Employees' Compensation Commission, Post Office Department, Bureau of Immigration, Coast and Geodetic Survey, Bureau of Fisheries, Bureau of Lighthouses, Bureau of Industrial Alcohol, and Veterans' Administration see pages 88 to 95.

By the act of March 20, 1933, and Executive order dated March 31, 1933, use of the marine hospitals for veterans was partially discontinued, and from a maximum of 1,056 on March 18, 1933, the number of these patients was reduced to 37 on June 30, 1933. Complaints were numerous because of the removal of disabled veterans from zones served by marine hospitals. It was necessary to close whole floors of the marine hospitals in Cleveland and Seattle and to discontinue many wards in other marine hospitals vacated by veterans, although the capacity of these hospitals had been expressly designed for all local needs. However, these marine hospitals are prepared at any time to resume the admission of such veterans as are still legally entitled to hospital treatment. In preparation also for drastic economies required by a reduction in the appropriation "Pay of

Personnel and Maintenance of Hospitals, 1934", from \$5,600,000 to \$4,320,000, the personnel in marine hospitals and relief stations was reduced on June 24, 1933, or shortly thereafter, by 476 persons, including 100 nurses and 37 medical and dental officers. Other expenditures were correspondingly reduced. It is evident that the standard of hospital care will be lowered unless, indeed, some of the legal obligations of the Public Health Service are to be repudiated. If commodity prices rise or demands for relief increase, the difficulties will be intensified.

### CLASSES OF BENEFICIARIES AND AMOUNT AND CHARACTER OF SERVICES RENDERED

#### *Summary of services by class of beneficiary*

Class of beneficiary	Hospital days		Out-patient treatments		Physical examinations (not related to treatment)		Remarks
	Number	Per-cent of total	Number	Per-cent of total	Number	Per-cent of total	
American merchant seamen.	1,039,092	58.94	518,123	49.60	7,158	11.55	Communicable diseases are reported to local health officers.
Veterans.....	316,298	17.97	6,760	.65	943	1.52	Patients of the Veterans' Administration.
Lepers.....	134,846	7.65	44	-----	19	.02	National Leper Home, Carville, La.
Coast Guard personnel...	106,126	6.01	214,805	20.56	9,557	15.42	All medical services and supplies, ashore and afloat.
Injured Federal employ-ees.	64,551	3.66	161,828	15.49	19,764	31.89	Patients of the Employees' Compensation Commission.
Immigrants.....	32,816	1.86	23,769	2.28	427	.69	Patients of the Bureau of Immigration.
Seamen, Engineer Corps; and Army Transport Service.	36,811	2.08	15,735	1.51	130	.21	Civilian employees on- Army vessels.
Seamen from foreign ves-sels.	4,123	.23	581	.05	14	.02	Pay patients.
Seamen and keepers, Lighthouse Service.	9,974	.56	7,418	.71	133	.22	Medical supplies also furnished to lighthouse vessels.
Alaska cannery workers leaving United States.	-----	-----	312	.03	5,031	8.12	Vaccinations and other preven-tive measures.
Pilots and other licensees..	-----	-----	-----	-----	6,536	10.55	For the Steamboat Inspection Service.
Civil-service applicants and employees.	-----	-----	-----	-----	5,029	8.11	For the Civil Service Commis-sion.
Shipping Board.....	-----	-----	-----	-----	1,414	2.29	To determine fitness for sea duty.
All others entitled to treatment.	18,417	1.04	95,215	9.12	5,816	9.39	From Bureau of Fisheries, Army, Navy, Mississippi River Com-mission, Coast and Geodetic Survey, etc.
Total.....	1,763,054	100.00	1,044,590	100.00	61,971	100.00	

The average per diem cost in marine hospitals reflects prevailing prices of commodities and rates of salaries. For the past 11 years it has been as follows:

1923.....	\$4.08	1929.....	\$4.03
1924.....	3.84	1930.....	4.15
1925.....	3.80	1931.....	4.05
1926.....	3.71	1932.....	3.77
1927.....	3.75	1933.....	3.34
1928.....	3.80		

Medical research to supplement investigations of the National Institute of Health and coordinated with other functions of the

Service was conducted by the principal marine hospitals upon assigned items, which include various phases of syphilis and its treatment (assigned to 10 different hospitals), cardio-vascular disease (5 hospitals), gonorrhea (4 hospitals), gastric ulcer, rheumatism, epidermophytosis, anemia, and leprosy.

### DENTAL TREATMENT

The total cost of all dental treatment at marine hospitals and relief stations, including salaries, supplies, repairs, and overhead expense was \$280,754.57, or \$709,758.80 less than its procurement at authorized fees by contract dentists. At very few stations is the dental personnel able to meet the full need of patients. The major items were as follows:

	1932	1933
Number of patients treated.....	116,952	145,877
Number of sittings.....	203,271	213,320
X-rays.....	39,635	39,823
Prophylactic treatments (hours).....	11,363	13,544
Vincent's stomatitis treatments (hours).....	6,101	4,362
Pyorrhea treatments (hours).....	4,254	4,626
Extractions.....	71,206	77,928
Alveolectomies.....	3,685	3,230
Alloy fillings.....	37,355	38,668
Gold inlays.....	2,266	1,023
Porcelain crowns.....	53	99
Silicate cement fillings.....	14,261	14,687
Dentures (full and partial).....	5,499	5,525
Fracture hours.....	619	470
Total number of treatments.....	585,535	619,392

In addition, 3,586 patients were treated at 32 smaller stations by contract dentists on a fee basis at a total cost of \$29,120.78, or an average of \$8.12 per patient as compared with \$1.92, the average cost by full-time dental officers.

Senior Dental Surg. C. T. Messner is in charge of dental activities in the field and bureau.

### COAST GUARD

The average number of Coast Guard beneficiaries on active duty and retired was 13,181. Medical services furnished in recent years are shown in the following table:

Year	Numerical strength of Coast Guard and medical services given				Average amount of medical service per person		
	Number of Coast Guard personnel	Hospital days	Out-patient treatments	Physical examinations	Hospital days	Out-patient treatments	Physical examinations
1923.....	4,684	41,681	32,530	4,207	8.9	6.7	0.9
1924.....	4,896	36,504	45,857	7,008	7.6	9.4	1.5
1925.....	7,077	60,336	90,494	13,394	8.5	12.8	1.9
1926.....	9,839	71,799	125,226	19,061	7.3	12.7	1.9
1927.....	10,984	76,564	155,977	18,787	6.9	14.2	1.7
1928.....	12,462	85,691	137,971	17,220	6.9	11.0	1.4
1929.....	12,833	88,870	169,697	17,748	6.9	13.2	1.4
1930.....	12,963	90,179	196,334	14,382	6.9	15.1	1.1
1931.....	13,020	86,829	187,063	8,262	6.7	14.4	.6
1932.....	13,189	91,655	198,800	11,481	6.9	15.1	.9
1933.....	13,181	106,126	214,805	9,557	8.0	16.3	.7



Twenty-three medical and dental officers are assigned exclusively to Coast Guard duty and 102 local physicians under appointment as acting assistant surgeons furnish medical and surgical relief and make physical examinations of Coast Guard and Lighthouse Service personnel at isolated units remote from any public health service relief station.

Medical officers have been assigned, as usual, to the cutters on the international ice patrol, to those on the cadet-practice cruise in European waters, and to the Bering Sea patrol. A dental officer was stationed at the patrol base at Unalaska during the cruising season. A medical officer and a dental officer are assigned to the *Northland* on its annual cruise to Point Barrow, Alaska. This cutter has a well-equipped dental unit and a specially appointed sick bay. In addition to their care of Coast Guard personnel, the medical and dental officers extend medical, surgical, and dental relief to a considerable number of Alaskan natives and others to whom such relief is not otherwise available. Valuable scientific observations have also been made of medical, sanitary, and dental conditions among the natives.

The new Coast Guard Academy at New London, Conn., provides space for enlarged and improved medical and surgical care. The medical facilities have been expanded from a sick-bay status to a well-equipped hospital unit of 20 beds, with complete operating room, X-ray equipment, and dental clinic. Medical and dental officers and nurses are detailed by the Surgeon General for duty there.

Instructions for medical examinations have been amended to provide more rigid requirements. A Wassermann test and blood-pressure reading are now compulsory. In the absence of an individual health record, abstracts are made of all hospital and out-patient treatment, and this information is considered in connection with physical examination of special temporary enlisted men for entrance to the regular establishment. An individual health record for all Coast Guard personnel was agreed upon jointly by the Coast Guard and Public Health Service to be in effect October 1, 1933.




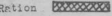
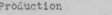

A new system of compulsory treatment of syphilis now insures adequate and continuous treatment for a minimum of 70 weeks. The outline of future treatment with dates is made by the medical officer in charge of the station concerned, and the Coast Guardsman is given official orders to present himself for treatment on the specified dates.

Medical Director A. J. McLaughlin is assigned to duty at Coast Guard headquarters as representative of the Surgeon General and chief of the medical section.

#### OPERATING COSTS

The total amount expended, including reimbursements from the Veterans' Administration, classified according to the General Accounting Office Bulletin, is shown below:

01	Personal services-----	\$3, 934, 362
0200	Janitors and sundry supplies, X-ray films, etc-----	46, 757
1210	Medical and hospital supplies-----	294, 048
0220	Scientific and educational supplies-----	5, 015
0230	Fuel (coal, oil, and gas)-----	150, 158
0250	Forage-----	24, 569
0260	Provisions-----	881, 824
0280	Sundry supplies-----	59, 674

GROUP OF HOSPITALS	HOSPITAL	COST PER PATIENT DAY					Salaries  Food  Other  Station  Station  Production 							
	LOCATION	RELIEF DAYS	TOTAL	SALARIES	FOOD	OTHER	1	2	3	4	5	6	7	8
GENERAL	Baltimore, Md.	58,333	\$1.94	\$2.33	\$0.41	\$0.80								
	Boston, Mass.	51,524	1.52	2.17	.36	.89								
	Buffalo, N.Y.	58,355	1.72	2.23	.40	1.03								
	Chicago, Ill.	44,231	1.85	2.37	.36	1.12								
	Cleveland, Ohio	73,148	1.65	2.39	.38	.88								
	Detroit, Mich.	52,308	1.24	2.50	.34	.80								
	Ellis Island, N.Y.	163,733	1.57	1.99	.39	1.19								
	Evansville, Ind.	22,144	1.59	1.77	.38	1.35								
	Galveston, Texas	70,930	2.60	1.41	.74	.35								
	Key West, Fla.	75,180	1.38	1.53	.50	1.35								
	Louisville, Ky.	24,162	1.63	2.15	.40	1.02								
	Memphis, Tenn.	54,565	1.33	1.63	.46	1.24								
	Mobile, Ala.	33,218	1.31	2.19	.36	.76								
	New Orleans, La.	158,945	1.55	2.02	.37	1.17								
	Norfolk, Va.	73,220	1.23	1.52	.42	.89								
	Pittsburgh, Pa.	31,532	1.27	2.30	.37	.90								
	Portland, Me.	26,401	1.74	1.21	.50	1.33								
	Port Townsend, Wash.	20,536	2.37	1.57	.43	.97								
	St. Louis, Mo.	70,506	1.31	1.65	.36	1.30								
	San Francisco, Calif.	142,049	1.34	2.15	.37	.82								
	Savannah, Ga.	56,578	2.35	1.76	.40	.79								
	Seattle, Wash.	27,165	1.71	2.19	.33	1.19								
	Stanley, N.J.	108,531	1.39	2.27	.31	.81								
	Vineyard Haven, Mass.	3,051	1.70	1.92	.46	1.32								
	New York, N.Y. (a)													
	Per diem cost for General Hospitals		1.42	2.05	.38	.99								
	Total Relief Days	1,376,366		Cost	\$4,709,996.89									
TUBERCULOSIS SANATORIUM	Fort Stanton, N.M.	36,924	1.46	1.24	.63	1.99								
	Cost				\$300,266.53									
LEPROSARIUM	Cerule, La.	134,837	2.46	1.40	.39	.67								
	Cost				\$331,879.09									
ALL	Per diem cost for all hospitals		1.34	1.95	.39	1.00								
	Relief days for all hospitals	1,598,127		Cost	\$5,142,142.71									

(a) In-Patient department of station closed.

AVERAGE PER DIEM COST OF IN-PATIENT RELIEF, UNITED STATES MARINE HOSPITALS, FISCAL YEAR 1933

03	Subsistence and support of persons (contract care)-----	\$509, 577
04	Care of animals-----	59
0500	Telegrams-----	1, 385
0510	Telephone-----	24, 577
06	Travel expenses-----	68, 917
07	Freight-----	78, 771
10	Furnishing heat, light, power, and water-----	185, 854
1100	Rent of buildings and offices-----	24, 217
1110	Other rents-----	5, 168
1280	Repairs and parts, motor vehicles-----	3, 824
1290	Alterations and repairs, building equipment-----	16, 087
1373	Laundry service-----	49, 462
1375	Ash and garbage removal-----	2, 085
1380	Miscellaneous services-----	2, 861
2250	Burials-----	20, 913
3000	Motor vehicles-----	7, 670
3010	Furniture, furnishings, and fixtures-----	110, 045
3020	Scientific equipment-----	111, 638
3040	Livestock-----	355
3050	Other equipment-----	45, 300
Total-----		6, 665, 170

As a description of representative activities, the complete annual report of the Marine Hospital, Baltimore, Md., will be found in the Public Health Reports for the second part of 1933.

#### CONSOLIDATED AND DETAILED REPORTS

The following tables give consolidated and detailed reports for the marine hospitals and relief stations:

TABLE 1.—*Number of patients treated annually, 1868 to 1933*<sup>1</sup>

Fiscal year	Sick and disabled patients furnished relief	Fiscal year	Sick and disabled patients furnished relief	Fiscal year	Sick and disabled patients furnished relief
Prior to reorganization:		After reorganization—Continued.		After reorganization—Continued.	
1868-----	11, 535	1890-----	50, 671	1912-----	51, 078
1869-----	11, 356	1891-----	52, 992	1913-----	50, 604
1870-----	10, 560	1892-----	53, 610	1914-----	53, 226
After reorganization:		1893-----	53, 317	1915-----	55, 782
1871-----	14, 256	1894-----	52, 803	1916-----	58, 357
1872-----	13, 156	1895-----	52, 643	1917-----	64, 022
1873-----	13, 529	1896-----	53, 804	1918-----	71, 614
1874-----	14, 356	1897-----	54, 477	1919-----	79, 863
1875-----	15, 009	1898-----	52, 709	1920-----	110, 907
1876-----	16, 808	1899-----	55, 489	1921-----	144, 344
1877-----	15, 175	1900-----	56, 355	1922-----	153, 633
1878-----	18, 223	1901-----	58, 381	1923 <sup>2</sup> -----	126, 956
1879-----	20, 922	1902-----	56, 310	1924-----	159, 686
1880-----	24, 860	1903-----	58, 573	1925-----	204, 944
1881-----	32, 613	1904-----	58, 556	1926-----	245, 140
1882-----	36, 184	1905-----	57, 013	1927-----	249, 973
1883-----	40, 195	1906-----	54, 363	1928-----	240, 592
1884-----	44, 761	1907-----	55, 129	1929-----	260, 552
1885-----	41, 714	1908-----	54, 301	1930-----	279, 350
1886-----	43, 822	1909-----	53, 704	1931-----	259, 364
1887-----	45, 314	1910-----	51, 443	1932-----	257, 208
1888-----	48, 203	1911-----	52, 209	1933-----	294, 101
1889-----	49, 518				

<sup>1</sup> These figures do not include patients treated in connection with veterans' relief activities of the service as follows: 1918, 192; 1919, 13,856; 1920, 279,036; 1921, 667,832; 1922, 242,379; 1923, 9,704; 1924, 3,414; 1925, 4,860; 1926, 3,749; 1927, 2,830; 1928, 3,448; 1929, 4,907; 1930, 6,817; 1931, 9,278; 1932, 9,667; and 1933, 8,377.

<sup>2</sup> In this year, and subsequently, the practice of recounting out-patients applying for treatment in more than 1 calendar month was discontinued.

TABLE 2.—Transactions at United States marine hospitals and other relief stations

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1933	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
Grand total.....	302, 478	44, 435	1, 202	3, 932	1, 763, 054	258, 043	1, 044, 590	61, 971
FIRST CLASS STATIONS								
Marine hospitals								
Baltimore, Md.....	8, 567	1, 769	38	197	68, 833	6, 798	49, 063	2, 510
Boston, Mass.....	8, 891	1, 717	38	148	51, 884	7, 174	36, 982	3, 665
Buffalo, N. Y.....	3, 678	700	21	60	28, 855	2, 978	21, 489	1, 126
Carville, La.....	1, 303	444	24	370	134, 837	859	1, 706	
Chicago, Ill.....	33, 527	1, 011	21	134	48, 231	32, 516	67, 181	638
Cleveland, Ohio.....	5, 371	2, 242	100	57	78, 149	3, 129	10, 336	325
Detroit, Mich.....	3, 092	1, 080	64	55	42, 398	2, 012	18, 296	815
Ellis Island, N. Y.....	12, 388	4, 601	98	409	163, 733	7, 787	22, 824	342
Evansville, Ind.....	173	367	17	27	20, 854	106	342	61
Fort Stanton, N. Mex.....	1, 474	345	18	236	86, 924	1, 129	3, 549	41
Galveston, Tex.....	4, 384	1, 726	35	110	60, 930	2, 658	16, 665	703
Key West, Fla.....	1, 579	879	13	43	36, 180	700	5, 123	85
Louisville, Ky.....	1, 090	727	23	32	24, 162	363	1, 779	304
Memphis, Tenn.....	2, 975	828	10	63	25, 365	2, 147	15, 602	1, 550
Mobile, Ala.....	3, 375	899	29	103	33, 218	2, 476	10, 767	1, 978
New Orleans, La.....	12, 486	4, 309	137	308	162, 545	8, 177	33, 408	2, 308
New York, N. Y.....	31, 170					31, 170	196, 291	10, 801
Norfolk, Va.....	8, 292	2, 039	64	201	79, 220	6, 253	28, 208	1, 100
Pittsburgh, Pa.....	2, 046	634	28	30	31, 582	1, 412	7, 185	439
Portland, Maine.....	1, 520	633	21	38	26, 501	887	3, 816	270
Port Townsend, Wash. <sup>1</sup> .....	793	564	10		20, 536	229	461	85
St. Louis, Mo.....	1, 968	476	27	58	30, 506	1, 492	8, 252	1, 186
San Francisco, Calif.....	13, 263	3, 718	95	367	142, 059	9, 545	57, 358	1, 945
Savannah, Ga.....	4, 161	1, 235	57	113	56, 578	2, 926	12, 792	1, 604
Seattle, Wash. <sup>2</sup> .....	3, 013	852	26	183	27, 465	2, 161	5, 261	4, 591
Stapleton, N. Y.....	8, 716	3, 701	63	264	108, 531	5, 015	24, 654	372
Vineyard Haven, Mass.....	331	149	3	20	8, 051	182	410	25
Contract overflow hospitals.....	201	201	3	30	23, 452			
Total.....	180, 127	37, 846	1, 083	3, 656	1, 621, 579	142, 281	659, 800	38, 869
SECOND AND THIRD CLASS STATIONS								
Aberdeen, Wash.....	272	22			198	250	444	62
Albany, N. Y.....	91	16	1		164	75	278	143
Anacortes, Wash.....	184	25			161	159	551	25
Apalachicola, Fla.....	69	14			179	55	198	7
Ashtabula, Ohio.....	221	22	3		381	199	446	13
Astoria, Oreg.....	522	88			663	434	1, 120	91
Balboa Heights, Canal Zone.....	595	156	2	10	1, 988	439	514	14
Bangor, Maine.....	39	1			7	38	75	44
Beaufort, N. C.....	755	141	2	1	1, 611	614	3, 655	11
Bellingham, Wash.....	222	14			139	208	838	191
Biloxi, Miss.....	1, 139	71			560	1, 068	3, 258	58
Boothbay Harbor, Maine.....	46	10			319	36	66	21
Brunswick, Ga.....	81					81	140	5
Burlington, Iowa.....	34	13			257	21	29	
Cairo, Ill.....	889	148	3	3	1, 915	741	2, 025	223
Calais, Maine.....	5					5	5	6
Cambridge, Md.....	126	30	2		543	96	455	1
Cape May, N. J.....	1, 916	104			429	1, 812	4, 916	128
Charleston, S. C.....	861	152	1	11	2, 703	709	1, 470	197
Chincoteague, Va.....	106					106	308	13
Cincinnati, Ohio.....	218	40	1	1	472	178	498	124
Cordova, Alaska.....	128	45	1	2	898	83	125	23
Corpus Christi, Tex.....	169	45			671	124	228	7
Crisfield, Md.....	1, 000	7			70	993	1, 710	3
Duluth, Minn.....	623	50	1		734	573	1, 229	86
Eastport, Maine.....	31					31	58	9
Edenton, N. C.....	22					22	150	2
Elizabeth City, N. C.....	156	2			12	154	607	24
El Paso, Tex.....	155	18	1		382	137	1, 334	84
Erie, Pa.....	320	19			120	301	1, 109	305
Escanaba, Mich.....	21	1			9	20	45	5
Eureka, Calif.....	181	30	2		354	151	381	10
Everett, Wash.....	170	33	1		413	137	495	2
Fall River, Mass.....	117	8	2		315	109	226	19
Gallipolis, Ohio.....	137	46	1		691	91	263	1
Gary, Ind.....	28					28	97	7

<sup>1</sup> Closed Feb. 1, 1933.<sup>2</sup> Opened Feb. 1, 1933.

TABLE 2.—*Transactions at United States marine hospitals and other relief stations—Continued*

	Total number of pa- tients treated	Number of pa- tients treated in hos- pitals	Died	Pa- tients remain- ing in hospi- tals June 30, 1933	Number of days relief in hospitals	Number of pa- tients furn- ished office relief	Number of times office re- lief was furnished	Number of phys- ical ex- amina- tions
SECOND AND THIRD CLASS STATIONS—continued								
Georgetown, S.C.	117	1			16	116	239	15
Gloucester, Mass.	502	14	1		94	488	1,503	50
Grand Haven, Mich.	266	20			198	246	461	54
Green Bay, Wis.	105	16	1	1	207	89	186	14
Gulport, Miss.	26	3			30	23	44	5
Hancock, Mich.	88	1			10	87	133	31
Honolulu, Hawaii	955	122	4	2	1,753	833	1,978	164
Houston, Tex.	1,316	119	3		1,251	1,197	3,250	34
Indiana Harbor, Ind.	60	3			12	57	124	
Jacksonville, Fla.	973	65	2		503	908	2,559	439
Juneau, Alaska.	301	65	2		1,462	236	283	199
Ketchikan, Alaska.	1,066	189	5	3	2,724	877	1,706	156
La Crosse, Wis.	42	12			133	30	53	27
Lewes, Del.	166	26			294	140	461	18
Los Angeles, Calif.	1,475	545	1	11	7,843	930	7,898	340
Ludington, Mich.	167	10			87	157	516	9
Machias, Maine	35					35	69	6
Manila, P.I.	1,469	175	3	2	5,374	1,294	1,717	661
Manistee, Mich.	78	17	1	1	92	61	543	8
Manitowac, Wis.	237	37				200	426	3
Marquette, Mich.	252	13			182	239	688	84
Marshfield, Oreg.	71	14			179	57	154	16
Menominee, Mich.	76	4			47	72	172	26
Miami, Fla.	1,156	65	1		540	1,001	2,524	170
Milwaukee, Wis.	1,013	185	1	3	2,331	828	2,497	284
Morehead City, N.C.	579	85	3		1,110	494	2,176	10
Nantucket, Mass.	101	8			36	93	190	7
Nashville, Tenn.	51					51	180	49
Natchez, Miss.	418	49	1		749	369	1,000	29
Newark, N.J.	16	4	1		66	12	52	6
New Bedford, Mass.	286	17	1		103	269	515	80
New Bern, N.C.	468	112	3		948	356	736	18
New Haven, Conn.	94	14	1	1	163	80	157	55
New London, Conn.	1,028	28			397	1,000	1,308	325
Newport, Oreg.	86	7			81	79	243	2
Newport, R.I.	196	22			153	174	308	28
Newport News, Va.	285					285	479	72
Ogdensburg, N.Y.	195	1			18	194	406	59
Olympia, Wash.	31	1			35	30	54	
Oswego, N.Y.	191	20	1		132	171	550	38
Paducah, Ky.	525	18			92	507	1,145	52
Panama City, Fla.	149	20	1		246	129	364	1
Pensacola, Fla.	520	110	2	2	838	410	1,425	130
Perth Amboy, N.J.	60	8			32	52	102	25
Philadelphia, Pa.	5,099	476	6	6	6,358	4,623	23,505	2,185
Ponce, P.R.	156	59		3	1,069	97	414	5
Port Angeles, Wash.	213	33			139	180	347	71
Port Arthur, Tex.	1,404	42	2		198	1,362	3,607	182
Port Huron, Mich.	208	10			119	198	663	139
Portland, Oreg.	2,295	174	3	3	3,953	2,121	5,274	1,136
Port Townsend, Wash. <sup>3</sup>	104	2	1		10	102	403	58
Providence, R.I.	347	31	1		361	316	884	188
Provincetown, Mass.	113					113	341	16
Reedville, Va.	474					474	1,486	15
Richmond, Va.	122	9			102	113	233	40
Rock Island, Ill.	2,526	15			73	2,511	9,527	2,639
St. Thomas, V.I.	51	5			117	46	114	1
San Diego, Calif.	385	32	2	1	760	353	1,604	207
Sandusky, Ohio.	59	4			42	55	123	11
San Juan, P.R.	877	125	2	7	2,266	752	2,320	133
San Pedro, Calif.	3,748	349	10	16	3,990	3,399	9,692	449
Sault Ste Marie, Mich.	1,090	111			1,893	979	2,023	98
Seattle, Wash.	3,671	132	4		1,418	3,539	12,058	823
Seward, Alaska.	225	69	1	5	1,715	156	252	
Sheboygan, Wis.	75	1			5	74	184	16
Sitka, Alaska.	89	7		1	287	82	168	19
South Bend, Wash.	65	32		1	312	33	131	6
Southport, N.C.	896	137	3		1,823	759	1,031	15
Superior, Wis.	244	21		2	253	223	480	9
Tacoma, Wash.	366	33			284	333	880	28
Tampa, Fla.	443	36	2		322	407	759	183

<sup>3</sup> Third class relief station, opened Feb. 1, 1933.



TABLE 2.—*Transactions at United States marine hospitals and other relief stations—Continued*

	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1933	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
SECOND AND THIRD CLASS STATIONS—continued								
Toledo, Ohio.....	475	71	1	4	1,596	404	1,345	137
Vicksburg, Miss.....	545	51			212	494	1,628	59
Washington, D.C.....	25,314	254	4	12	2,900	25,060	55,949	4,227
Washington, D.C. Dental Clinic.....	1,141					1,141	17,243	
Washington, N.C.....	273	47	2		493	226	410	17
White Stone, Va.....	582				564	582	2,691	4
Wilmington, N.C.....	520	52			564	468	1,308	111
Wrangell, Alaska.....	76	12	3		193	64	186	13
FOURTH CLASS STATIONS								
Ashland, Wis.....	103	10		1	106	93	181	102
Bath, Maine.....	12					12	61	
Bay City, Mich.....	48	1			6	47	176	
Beaufort, S.C.....	13					13	24	2
Bridgeport, Conn.....	33	12	1		123	21	34	
Hartford, Conn.....	4	4			47			
Nome, Alaska.....	27	4			59	23	31	
Petersburg, Alaska.....	290	16	1		233	274	1,103	
Portsmouth, N.H.....	8					8	24	
Saginaw, Mich.....	6					6	21	
Wilmington, Del.....	15	1			7	14	27	
MISCELLANEOUS								
Curtis Bay, Md. (U.S. Coast Guard).....	2,549					2,549	12,805	155
U.S. Coast Guard Academy, New London, Conn.....	1,312	90	2	5	1,010	1,222	5,247	374
St. Elizabeth's Hospital, Wash., D.C.....	176	176	5	154	56,370			
Special acting assistant surgeons for Coast Guard and Lighthouse Service.....	4,947	173		1	979	4,774	15,481	801
U.S. Coast Guard Vessels and bases.....	29,508					29,508	119,314	2,670
Emergency.....	89	54			507	35	98	1
Total.....	122,351	6,589	119	276	141,475	115,762	384,790	23,102
Grand total.....	302,478	44,435	1,202	3,932	1,763,054	258,043	1,044,590	61,971

TABLE 3.—*Medical services for various classes of beneficiaries*

Beneficiary	Total number of patients treated	Number of patients treated in hospitals	Died	Patients remaining in hospitals June 30, 1933	Number of days relief in hospitals	Number of patients furnished office relief	Number of times office relief was furnished	Number of physical examinations
American seamen.....	135,868	23,892	632	2,772	1,039,092	111,976	518,123	7,158
Foreign seamen.....	411	186	6	13	4,123	225	581	14
Coast Guard.....	55,660	4,380	19	281	106,126	51,280	214,805	9,557
Bureau of Fisheries.....	36	7		1	83	29	70	3
Army.....	370	47	1		427	323	1,138	319
Navy and Marine Corps.....	188	48	1	5	701	140	595	23
Mississippi River Commission.....	13	3			54	10	19	2
Engineer Corps and Army Transport Service.....	5,231	1,163	34	85	36,811	4,068	15,735	130
Lighthouse Service.....	2,501	417	15	28	9,974	2,084	7,418	133
Coast and Geodetic Survey.....	991	167	2	9	3,824	824	3,483	538
Employees' Compensation Commission.....	51,204	2,951	13	207	64,551	48,253	161,828	19,764
Veterans' Administration.....	8,377	7,902	422	40	316,298	475	6,760	943
Immigration Service.....	9,615	1,933	15	66	32,816	7,682	23,769	427
Public Health Service officers and employees.....	8,543	852	15	41	12,812	7,691	56,999	1,531
Lepers.....	454	446	24	370	134,846	8	44	19
Miscellaneous.....	23,016	41	3	14	516	22,975	33,223	21,410
Total.....	302,478	44,435	1,202	3,932	1,763,054	258,043	1,044,590	61,971

TABLE 4.—Cause of admission and condition on discharge, marine hospitals and other relief stations

Disease or condition	Number having specified diseases or injury <sup>1</sup>					Condition on discharge of patients for specified diseases or injuries				
	Major condition for which admitted <sup>2</sup>	Condition second in importance	Condition third in importance <sup>3</sup>	Sequelae to major condition	Total number of persons having each specified disease or injury	Cured	Improved	Not improved	Died	Other conditions
Abnormalities and congenital malformations.....	42	-----	-----	-----	-----	8	23	3	-----	8
Blood and blood-forming organs, diseases and injuries of.....	83	-----	-----	-----	-----	1	51	2	13	16
Bones and cartilages, diseases and injuries of.....	1,950	-----	-----	-----	-----	275	978	66	39	592
Circulatory system, diseases and injuries of:										
Heart disease, valvular.....	291	220	61	8	580	-----	175	9	61	46
Varicose veins.....	334	237	124	2	697	64	222	3	1	44
All others.....	1,503	-----	-----	-----	-----	93	919	33	187	271
Communicable and infectious diseases, not including tuberculosis and venereal:										
Conjunctivitis, granular trachomatous.....	12	2	3	-----	17	1	9	-----	-----	2
Dengue.....	2	-----	1	-----	3	1	-----	-----	-----	-----
Influenza.....	1,081	99	17	-----	1,197	345	595	1	5	135
Malaria.....	227	30	4	1	263	30	158	-----	3	36
Rheumatic fever, acute.....	77	14	6	2	99	17	47	-----	1	12
Typhoid fever.....	32	5	2	-----	39	21	4	-----	6	1
All others.....	968	-----	-----	-----	-----	487	396	5	18	62
Dental.....	543	5,409	4,258	10	10,220	78	320	1	2	142
Digestive system, diseases and injuries of:										
Appendicitis.....	1,285	237	62	1	1,585	605	531	-----	28	121
Gastritis.....	328	42	18	2	390	71	193	3	2	59
Hemorrhoids.....	981	452	217	-----	1,650	386	504	3	3	85
All others.....	2,085	-----	-----	-----	-----	321	1,412	12	60	271
Ear, nose, and throat, diseases and injuries of:										
Deviation of nasal septum.....	464	510	252	-----	1,226	149	256	3	-----	56
Otitis media.....	258	172	78	1	509	42	162	5	4	45
Tonsillitis.....	2,413	1,169	378	4	3,964	1,052	1,147	1	4	209
All others.....	851	-----	-----	-----	-----	224	480	10	9	128
Endocrines, diseases and injuries of.....	299	-----	-----	-----	-----	15	201	6	22	55
Eye and adnexa, diseases and injuries of.....	689	-----	-----	-----	-----	153	387	15	3	131
Genito-urinary system, diseases and injuries of (exclusive of venereal):										
Nephritis.....	161	174	78	9	422	3	83	3	41	31
All others.....	1,671	-----	-----	-----	-----	348	1,003	13	37	270
Hernia.....	1,974	563	197	-----	2,734	912	828	16	15	203
Joints and bursae, diseases and injuries of:										
Arthritis.....	932	438	174	223	1,767	53	690	29	6	154
All others.....	444	-----	-----	-----	-----	61	247	17	-----	119
Leprosy.....	70	-----	-----	-----	-----	-----	22	-----	24	24
Lymphatic system, diseases and injuries of:										
Lymphadenitis.....	273	96	30	148	547	89	136	-----	3	45
All others.....	38	-----	-----	-----	-----	11	12	2	5	8
Muscles, fasciae, tendons and tendon sheaths, diseases and injuries of.....	1,214	-----	-----	-----	-----	221	718	23	3	249

<sup>1</sup> Except in the case of specific diseases, statistics are given only for the major condition for which admitted.

<sup>2</sup> Represents number of discharges for each condition.

<sup>3</sup> Where sequelae were given, no third diagnosis was recorded.

TABLE 4.—Cause of admission and condition on discharge, marine hospitals and other relief stations—Continued

Disease or condition	Number having specified diseases or injury					Condition on discharge of patients for specified diseases or injuries				
	Major condition for which admitted	Condition second in importance	Condition third in importance	Sequelae to major condition	Total number of persons having each specified disease or injury	Cured	Improved	Not improved	Died	Other conditions
Nervous system, diseases and injuries of:										
Epilepsy without psychosis.....	46	23	8	1	78	23	33	2	1	11
Neuritis.....	276	101	23	7	407	190	190	1	2	60
All others.....	519					50	295	23	24	127
Obstetric and gynecological conditions.....	42					11	26			5
Parasitic diseases:										
Uncinariasis.....	37	67	13		117	5	24		1	7
All others.....	196					35	132	3		26
Poisonings and intoxications:										
Alcohol (ethyl) poisoning acute.....	102	40	5		147	31	53		2	16
Alcoholism, chronic (without psychosis).....	45	13	7		65	6	30		3	6
All others.....	88					27	34	1	2	24
Psychiatric diseases:										
Drug addiction without psychosis.....	23	14	5		42		11		2	10
All others.....	288					15	135	21	10	107
Respiratory system, diseases and injuries of (exclusive of tuberculosis):										
Asthma.....	223	73	14		310	4	166	3	11	39
Bronchitis.....	520	329	102	9	960	95	321	2	5	97
Pleurisy.....	220	130	31	11	392	41	139	4	6	30
Pneumonia.....	310	96	77	27	510	86	125		78	21
All others.....	100					7	51	4	11	27
Skin and its appendages, diseases and injuries of:										
Tuberculosis:										
Pulmonary.....	1,008	143	72		1,223		309	15	180	504
Otherwise unclassified.....	93	52	22	11	178	7	34	4	14	34
Tumors:										
Carcinoma.....	244	57	39	3	343	19	67	14	92	52
All others.....	426					124	207	4	20	71
Venereal diseases:										
Chancroidal infections.....	289	46	15	142	492	83	146	1	1	58
Gonococcus infections.....	2,359	275	66	24	2,724	247	1,627	1	7	477
Syphilis.....	2,309	1,049	356	3	3,717	5	1,586	16	51	651
All others.....	22					9	11			2
Inoculations.....	1									1
Under observation.....	580									580
Miscellaneous:										
Cellulitis.....	294	74	12	45	425	84	164		2	44
All others.....	3,603					800	1,788	40	41	934
Total.....	38,789					8,188	21,136	452	1,190	7,823

NOTE.—Immigration patients at U.S. Marine Hospital, Ellis Island, N.Y., are not included in this table.

TABLE 5.—Number of days in hospital for patients discharged from marine hospitals and other relief stations

Group	Class of beneficiary																
	Total	Amer- ican sea- men	For- eign sea- men	Coast Guard	Army	Navy and Mar- ine Corps	Miss- is- sip- pi River Com- mis- sion	Sea- men Eng- ineer Corps and Army Trans- port Service	Light House Serv- ice	Coast and Geo- detic Sur- vey	Em- ploy- ees' Com- pen- sa- tion Com- mis- sion	Vet- erans' Admin- istra- tion	Immi- gra- tion Serv- ice	Public Health Service officers and em- ploy- ees	Lepers	Civil- ian Con- serva- tion Corps	Mis- cella- neous
Abnormalities and congenital malforma- tions.....	1,081	771	-----	60	-----	-----	-----	-----	-----	-----	10	236	-----	4	-----	-----	-----
Blood and blood-forming organs, diseases and injuries of.....	6,124	2,279	-----	244	-----	-----	-----	859	9	-----	4	2,631	-----	98	-----	-----	-----
Bones and cartilages, diseases and injuries of.....	92,794	44,181	663	4,568	3	102	30	1,147	600	43	17,505	23,421	348	160	-----	-----	23
Circulatory system, diseases and injuries of. Communicable and infectious diseases, not including tuberculosis and venereal.....	119,205	69,777	19	3,278	31	30	-----	1,650	1,585	1,219	597	40,281	71	647	-----	-----	20
Dental.....	38,923	22,537	292	5,490	-----	30	-----	1,860	360	345	1,571	4,911	278	1,246	-----	3	-----
Digestive system, diseases and injuries of.....	10,287	5,091	43	816	-----	-----	-----	156	180	3	303	3,634	33	28	-----	-----	-----
Ear, nose, and throat, diseases and injuries of.....	139,328	61,790	289	10,131	166	56	25	4,230	985	298	494	58,792	186	1,577	61	42	206
Endocrines, diseases and injuries of.....	68,418	31,164	56	8,281	72	41	-----	1,934	238	271	3,359	22,222	44	716	-----	-----	20
Eye and adnexa, diseases and injuries of.....	27,451	18,704	6	516	-----	-----	-----	215	213	-----	162	7,531	44	60	-----	-----	-----
Genito-urinary system, diseases and in- juries of (exclusive of venereal).....	18,491	9,905	11	1,198	-----	15	-----	280	87	29	850	6,046	56	14	-----	-----	-----
Hernia.....	69,578	38,244	90	3,605	7	6	-----	1,287	306	140	442	24,553	559	320	-----	-----	19
Joints and bursæ, diseases and injuries of.....	60,214	36,880	138	1,075	-----	-----	-----	1,006	363	132	8,532	11,515	134	439	-----	-----	-----
Leprosy.....	65,230	30,553	41	2,664	-----	82	-----	767	332	56	3,693	26,691	30	321	-----	-----	-----
Lymphatic system, diseases and injuries of.....	128,311	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	128,311	-----	-----
Muscles, fasciæ, tendons and tendon sheaths, diseases and injuries of.....	11,806	8,875	297	259	6	-----	-----	252	29	72	81	1,785	14	136	-----	-----	-----
Nervous system, diseases and injuries of.....	29,242	12,973	54	2,672	4	27	-----	261	131	39	8,922	4,041	14	104	-----	-----	-----
Obstetric and gynecological conditions.....	65,122	40,765	191	2,805	2	10	-----	2,351	202	-----	1,582	17,050	57	107	-----	-----	-----
Parasitic diseases.....	790	323	-----	-----	-----	-----	-----	37	-----	-----	3	153	2	272	-----	-----	-----
Poisonings and intoxications.....	6,707	3,377	32	610	3	-----	-----	291	66	-----	88	2,218	8	14	-----	-----	-----
Psychiatric diseases.....	4,068	1,903	-----	104	-----	1	-----	727	17	5	319	983	-----	9	-----	-----	-----
Respiratory system, diseases and injuries of (exclusive of tuberculosis).....	43,950	35,222	20	3,869	-----	14	-----	98	51	78	1,264	3,308	26	-----	-----	-----	-----
Skin and its appendages, diseases and in- juries of.....	58,808	35,229	97	1,716	13	7	-----	601	209	115	329	19,602	212	671	-----	7	-----
Tuberculosis.....	27,578	15,504	21	2,305	-----	3	-----	809	132	156	1,300	6,954	165	224	-----	-----	5
	213,059	181,749	72	3,448	-----	-----	-----	3,126	718	323	2,217	19,277	249	1,880	-----	-----	-----

Tumors.....	27,700	15,687	168	1,086	-----	-----	-----	769	419	30	380	8,868	-----	291	-----	-----	2
Venereal diseases.....	257,335	182,929	935	23,792	-----	43	-----	8,034	1,334	418	671	34,744	4,026	378	-----	-----	31
Inoculations.....	2	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Under observation.....	3,337	1,333	8	758	-----	-----	-----	52	13	4	293	468	74	38	293	-----	3
Miscellaneous.....	97,211	47,170	595	5,091	24	19	-----	1,718	676	497	14,506	26,088	106	530	-----	8	183
Total.....	1,692,150	954,915	4,138	90,443	331	486	55	34,517	9,255	4,273	69,477	378,003	6,736	10,284	128,665	60	512

NOTE.—Immigration patients at Marine hospital, Ellis Island, N.Y., are not included in this table.

TABLE 6.—*Classification of out-patient treatments furnished at United States marine hospitals and other relief stations*

	General medical	Dental	Eye, ear, nose, and throat	Neuro- psychi- atric	Tuber- culosis	Surgical	Venereal diseases	Inocula- tions and vaccina- tions	Arseni- cals	Physio- therapy and X-ray	Total
Marine hospitals.....	86,154	224,445	34,491	101	121	107,634	79,884	3,245	19,852	103,873	659,800
Other relief stations.....	89,600	32,493	15,036	404	327	55,668	15,808	5,422	7,261	22,622	244,650
Special acting assistant surgeons.....	9,036	479	1,029	86	121	2,631	511	1,405	62	121	15,481
Coast Guard vessels and bases.....	62,494	12,455	13,605	22	166	21,412	5,731	5,994	706	1,976	124,561
Emergency.....	98	-----	-----	-----	-----	-----	-----	-----	-----	-----	98
Total.....	247,391	269,872	64,161	613	735	187,345	101,934	16,066	27,881	128,592	1,044,590



## DIVISION OF VENEREAL DISEASES

In charge of Asst. Surg. Gen. TALIAFERRO CLARK

### RESEARCH

STUDIES AT THE VENEREAL DISEASE LABORATORY, STAPLETON, N.Y.

The experimental resurvey in the field of personal prophylaxis in syphilis has been continued, and two preliminary studies have been completed and published. The first dealt with an experimental method of contact infection suitable for prophylaxis work, and the second with the time interval necessary for the penetration of the intact mucosa by virulent syphilis organisms.

Experimental studies designed to test the possibility of a life cycle of the spirochete were carried out. By use of special dark field and micro-manipulation equipment, intraocular inoculations of animals with single spiral forms have been done, and also the corollary, the inoculation with material known to be infectious but from which the spiral form has been excluded.

The technique for a combination single cell and tissue culture study has been worked out through which it is hoped to test the ability of the *Spirochaeta pallida* to reproduce under controlled conditions. The preliminary work has been carried out with chick heart cultures to which is added a single spirochete taken from lesions of human or experimental disease.

The influence of hyperpyrexia induced by ultra-short-wave radio has been studied in rabbits with the object of determining the factor in malaria and artificial fever therapy which is responsible for the beneficial results noted in human disease.

### STUDY OF UNTREATED SYPHILIS IN THE NEGRO

A project was started to study the late effects of untreated syphilis in the Negro for comparison with treated groups of syphilitic individuals of this race. A county in a State of the far South, with a large Negro population and with rather inadequate facilities in the outlying districts for the treatment of syphilis, was selected so that the greatest number of cases of untreated syphilis might be uncovered with a minimum of effort and expenditure. About 400 persons with untreated syphilis were found and were subjected to intensive clinical and laboratory examinations.

Of 4,025 Negroes serologically tested, 907, or 22.5 percent, gave a definite positive test for syphilis on 2 occasions and an additional 5.5 percent gave doubtful positive tests on 2 occasions or a single positive test at only 1 time. These figures include individuals of both sexes, but only the previously untreated males with two positive serologic tests are included in the study. A preliminary check up indicates that syphilis of the cardiovascular system is extremely common in this racial group and shows that any comprehensive method for the control of heart disease among Negroes must give

thorough consideration to the influence of syphilis. Syphilis of the skin and osseous system was also fairly common in the group studied, and involvement of the central nervous system was not infrequent but was usually of a vascular type.

The treatment of syphilis under ideal conditions is of the utmost value in the control of this insidious disease, but, unfortunately, owing to various social and economic influences, the ideal method of therapy is seldom possible of attainment, and the vast majority of infected people receive treatment which is generally regarded as inadequate, or no treatment at all. It is highly desirable, therefore, to ascertain, if possible, the relative benefits accrued from adequate and from inadequate treatment.

#### STUDIES IN COOPERATION WITH SELECTED CLINICS

Work was continued in the cooperative clinical studies from the case reports of five of the leading venereal disease clinics in the United States, with the financial assistance of a large philanthropic foundation. A series of papers on latent syphilis was completed and published in "Venereal Disease Information." Much valuable information on the results of treatment in early latent and late latent syphilis is contained in this treatise. The results of a study of reports of the reactions following 177,360 injections of the arsenical drugs administered to 8,810 patients was completed and will be published.

#### STUDIES OF PREVALENCE OF VENEREAL DISEASES

Cooperation was continued with city and State health authorities in an effort to determine the extent of the problem of syphilis and gonorrhea in a number of communities. A prevalence and incidence survey of venereal diseases was made in the city of Chester and Delaware County, Pa., as a part of a general administrative study of the medical facilities in this county. The results of this survey and of those previously made in San Francisco, Calif., and in the city of Birmingham and Jefferson County, Ala., will be published in the official journals of the medical societies of these States.

The results obtained in the 16 communities resurveyed last year have been published. The trend of venereal diseases in these various communities with a total population of 7,000,000 was so irregular that a definite statement cannot be made concerning the increase or decrease of these diseases in the United States as a whole. The composite rate for syphilis in these 16 communities is 11 percent higher. The higher percentage of cases of early syphilis coming for treatment is a hopeful sign for ultimate control of the disease. The trend for gonorrhea was slightly downward, although there were a number of small cities and counties which showed a decidedly high percentage of increase. This lack of uniform decrease in the gonorrhea rate should cause some hesitation in the acceptance of these lower rates as representing a true decrease in the number of individuals needing treatment.

#### THE VENEREAL DISEASE CLINIC, HOT SPRINGS, ARK.

There were 4,036 applicants for treatment at the Public Health Service Clinic which is conducted for the treatment of indigent persons infected with venereal diseases. Only 2,883 of these applicants were

found to be infected. This number, however, represented 4,485 cases of venereal disease, since 1,602, or 56 percent, had both syphilis and gonorrhea. A total of 73,446 treatments were given. (See tables 5 and 6 for summary of clinic activities for the year.)

The study of 10,000 syphilis records obtained from patients treated at this clinic was completed and will be published in the near future.

Seven physicians were given postgraduate courses at the clinic on request.

#### COOPERATIVE ACTIVITIES

*State Health departments.*—Continued assistance has been extended to the several States requesting aid in the organization of venereal disease control measures when assurance has been given by the State health department that venereal disease activities are to become a continuous and integral part of their health programs. Members of the field staff have been engaged in the States of Tennessee, North Carolina, and Alabama in working out the details of such a program. Activities previously undertaken in the States of Georgia, Mississippi, and Virginia have been continued by the States themselves.

Forty-seven States reported the prevalence of venereal diseases and the measures employed for their control. These States reported 386,597 cases of venereal disease, 234,647 cases of syphilis, 149,527 cases of gonorrhea, and 2,423 cases of chancroid. Laboratory examinations to the number of 2,118,038 were reported, including 1,742,569 serologic tests for the diagnosis of syphilis, 7,776 dark field examinations, and 367,693 examinations for the gonococcus. A total of 1,285,665 doses of arsphenamines were distributed, an increase of 6 percent over 1932. The State activities are shown in table 1.

In 1933, 572 clinics reported the venereal diseases to the Public Health Service through their State health departments, as compared with 533 in 1932. These clinics reported 149,943 new admissions. (See table 3 for detailed report.)

*Office of Indian Affairs, Department of Interior.*—Aid has been extended to this office on request of the Commissioner. In North Carolina a survey of the Cherokee Indian Reservation was made and 1,080 Indians were serologically tested for syphilis; approximately 6 percent were found positive.

*Division of Marine Hospitals.*—The maintenance of special case record forms, prepared several years ago to secure a continuity of record in cases of syphilis treated in the marine hospitals and to standardize therapeutic methods as far as practicable, was continued. Nine additional hospitals expressed their desire to participate during the year. It is now possible to give definite information regarding the past treatment of a large group of the beneficiaries of the Service infected with syphilis.

A study of the records of 69,000 beneficiaries admitted to the marine hospitals in the past 2 years is being conducted to determine the occurrence of syphilis among those admitted for hospitalization and treatment under some other diagnosis. A preliminary study shows that 12 percent of the patients in marine hospitals have syphilis. The study should also determine the extent to which syphilis prolongs hospitalization in cases in which it complicates some other illness and may even indicate the importance of a syphilitic infection in the production of some puzzling diseases of unknown etiology.

*Division of Mental Hygiene.*—The special case record forms which have been employed so successfully in the marine hospitals of the Public Health Service were introduced, in cooperation with the Division of Mental Hygiene, in the Federal penal and correctional institutions. The use of these forms should yield manifold benefits in standardizing the diagnosis and treatment of the venereal diseases and should be of great value in furnishing a continuous record when prisoners are transferred from one institution to another.

#### VENEREAL DISEASE INFORMATION

The number of subscriptions to the monthly abstract journal Venereal Disease Information, published by this division, averaged 6,240. Curtailment of the appropriation for printing has made it necessary to decrease the number of abstracts previously published by more than 50 percent. Venereal Disease Information is the only publication which is devoted almost solely to the publication of abstracts of the current medical literature pertaining to the venereal diseases, and its value in placing the opinion of authorities before the practicing physician is inestimable. The total mailing list, both paid and gratis, to Venereal Disease Information averaged 8,943.

Requests for educational material on venereal diseases and sex hygiene numbered 9,323. There were 85,203 publications distributed to State health departments and private individuals, and 176 reels of the film "The Science of Life" sent to 25 organizations and schools in 13 States.

TABLE 1.—*Report of State departments of health showing the number of cases of syphilis and gonorrhea reported, the annual rates per 1,000 inhabitants, the amount of arsphenamine distributed, and the laboratory examinations made from July 1, 1932, to June 30, 1933*

State	Number of cases		Annual rate for syphilis and gonorrhea per 1,000 inhabitants <sup>1</sup>	Doses of arsphenamines distributed	Laboratory examinations		
	Syphilis	Gonorrhea			Wassermann (or other similar) tests	Microscopic examinations for <i>Spirochaeta pallida</i>	Microscopic examinations for gonococcus
Total.....	234, 647	149, 527	3. 2	1, 285, 665	1, 742, 569	7, 776	367, 693
Alabama.....	9, 943	2, 643	4. 8	70, 303	68, 643	133	10, 556
Arizona.....	162	180	. 8				
Arkansas.....	3, 998	1, 645	3. 0	20, 039	33, 559	454	9, 298
California.....	19, 587	13, 430	5. 8	227, 327	86, 819	495	26, 663
Colorado <sup>2</sup> .....	370	246	1. 2	4, 170	5, 143		1, 181
Connecticut.....	924	898	1. 1	12, 678	3, 265	16	1, 367
Delaware.....	1, 514	406	8. 1	3, 975	4, 824		765
District of Columbia.....	2, 122	1, 335	7. 1	11, 694	6, 327	33	4, 089
Florida.....	3, 769	815	3. 1	17, 210	12, 006	52	867
Georgia.....	12, 134	6, 036	6. 2	70, 792	77, 412		3, 600
Idaho.....					9, 089		1, 467
Illinois.....	17, 118	15, 366	4. 3	99, 890	92, 806	2, 244	47, 448
Indiana.....	2, 790	1, 817	1. 4	42, 811	105, 763		6, 485
Iowa.....	721	571	. 5	9, 762	2, 856	128	3, 193
Kansas.....	1, 057	844	1. 0	10, 355	28, 766	16	2, 717
Kentucky.....	3, 520	4, 839	3. 2	25, 130	10, 657	401	5, 647
Louisiana.....	2, 611	1, 448	1. 9	13, 666	17, 645	67	3, 329
Maine.....	460	607	1. 3	3, 642	8, 061		3, 723
Maryland.....	3, 951	2, 691	4. 1	52, 408	11, 982	71	5, 467
Massachusetts.....	4, 392	6, 413	2. 5	81, 096	102, 941		9, 660
Michigan.....	10, 222	6, 584	3. 5	43, 242	38, 876	145	38, 396
Minnesota.....	3, 886	4, 284	3. 2	9, 294	115, 363		12, 092
Mississippi.....	10, 134	15, 437	12. 7		24, 214		1, 197
Missouri.....	3, 699	1, 748	1. 5	23, 031	25, 367	1, 209	15, 366
Montana.....	523	340	1. 6				
Nebraska.....	647	969	1. 2	7, 793	23, 759	40	4, 198
Nevada <sup>2</sup> .....					1, 200		306
New Hampshire.....	143	143	. 6	2, 266	6, 617		2, 116
New Jersey.....	6, 894	3, 703	2. 6	39, 348	40, 889		5, 907
New Mexico.....	328	263	1. 4				
New York.....	53, 834	17, 778	5. 7	99, 035	497, 494	513	52, 490
North Carolina.....	4, 317	2, 095	2. 0				
North Dakota <sup>3</sup> .....	391	717	1. 8	240	5, 173	29	2, 351
Ohio.....	7, 503	4, 000	1. 7	62, 795	46, 896	1, 141	13, 871
Oklahoma.....	1, 475	1, 238	1. 1				
Oregon <sup>2</sup> .....	440	592	1. 2	4, 098	9, 817	18	3, 486
Pennsylvania <sup>4</sup> .....	3, 858	3, 684	. 8	39, 457	64, 007		16, 560
Rhode Island.....	1, 062	803	2. 7	12, 530	15, 590	42	3, 571
South Carolina.....	5, 241	7, 396	7. 3	<sup>5</sup> 2, 561	<sup>5</sup> 589		<sup>5</sup> 2, 057
South Dakota.....	221	491	1. 0		5, 896		
Tennessee.....	13, 471	6, 392	7. 6	66, 536	48, 153	185	7, 013
Texas.....	5, 551	672	1. 1	37, 053	7, 580	13	2, 651
Utah <sup>6</sup> .....							
Vermont.....	4, 343	365	2. 1	<sup>5</sup> 1, 827	<sup>5</sup> 4, 367	<sup>5</sup> 4	<sup>5</sup> 1, 116
Virginia.....	2, 647	2, 647	2. 9	<sup>7</sup> 3, 763	<sup>7</sup> 10, 659		<sup>7</sup> 926
Washington.....	2, 442	2, 412	3. 1	9, 212	41, 745	190	22, 058
West Virginia.....	2, 071	1, 056	1. 8	37, 368	8, 769	80	2, 062
Wisconsin.....	527	1, 488	. 7	7, 268	10, 985	57	10, 381
Wyoming <sup>6</sup> .....							

<sup>1</sup> Excludes chancroid which formerly was included in the annual rates.

<sup>2</sup> For 6 months.

<sup>3</sup> For 11 months.

<sup>4</sup> In the absence of reporting regulations in Pennsylvania only the reports received from the clinics operated by the Pennsylvania State Health Department are included.

<sup>5</sup> For 10 months.

<sup>6</sup> Not reporting.

<sup>7</sup> For 2 months.



TABLE 2.—*Report of 72 correctional and penal institutions cooperating with State boards or departments of health*

New cases admitted:	Number
Syphilis.....	7, 586
Gonorrhea.....	3, 619
Chancroid.....	77
Total.....	11, 282
Cases discharged as arrested or cured.....	7, 878
Treatments given.....	308, 691
Doses of arsphenamines administered.....	49, 917
Wassermann tests made.....	54, 369
Microscopic examinations for gonococcus.....	15, 569

TABLE 3.—*Report of 572 clinics furnished through State health departments, July 1, 1932, to June 30, 1933*<sup>1</sup>

State	Total monthly reports received	New cases admitted				Cases discharged as arrested or cured	Treatments given	Doses of arsphenamines administered	Wassermann tests made	Microscopic examinations for gonococcus
		Total	Syphilis	Gonorrhea	Chancroid					
Total.....	6, 024	149, 943	89, 849	57, 522	2, 572	64, 697	23, 209, 073	864, 714	540, 526	221, 714
Alabama.....	124	11, 738	9, 309	2, 327	102	5, 217	162, 329	69, 837	11, 313	1, 531
Arkansas.....	49	5, 169	3, 733	1, 433	3	5, 165	183, 877	19, 393	33, 079	10, 031
California.....	385	13, 131	7, 905	5, 199	27	3, 037	285, 354	69, 095	48, 934	22, 931
Colorado <sup>3</sup> .....	24	493	290	197	6	300	17, 029	4, 170	1, 188	488
Connecticut.....	125	1, 830	925	898	7	1, 353	50, 831	12, 678	3, 265	1, 367
District of Columbia.....	12	3, 468	2, 122	1, 335	11	104	39, 985	11, 694	6, 327	4, 089
Florida.....	36	3, 203	2, 348	786	69	267	37, 971	17, 193	12, 006	594
Georgia.....	82	3, 827	2, 270	1, 531	26	1, 618	63, 923	28, 863	27, 473	1, 032
Illinois.....	282	12, 923	6, 627	6, 207	89	9, 855	378, 456	95, 841	74, 041	40, 597
Indiana.....	191	3, 435	1, 985	1, 387	63	2, 185	124, 470	40, 146	14, 970	4, 289
Iowa.....	120	1, 297	721	571	5	680	42, 395	9, 762	2, 859	3, 193
Kansas.....	36	824	434	366	24	267	21, 733	6, 815	2, 694	1, 577
Kentucky.....	293	8, 483	3, 531	4, 841	111	1, 928	94, 950	24, 511	13, 405	5, 534
Louisiana.....	21	625	354	268	3	116	7, 594	2, 895	1, 678	1, 369
Maine.....	96	689	310	379	-----	246	13, 467	3, 642	1, 129	364
Maryland.....	332	6, 804	3, 933	2, 596	275	2, 167	149, 064	52, 256	11, 862	4, 983
Massachusetts.....	300	6, 140	3, 028	3, 112	-----	1, 368	-----	-----	-----	-----
Michigan.....	154	6, 414	3, 033	3, 315	66	3, 066	213, 105	43, 182	37, 490	38, 375
Minnesota.....	47	765	368	396	1	279	25, 750	4, 829	2, 596	999
Missouri.....	92	1, 738	1, 164	573	1	605	41, 311	7, 637	11, 471	3, 100
Nebraska.....	36	958	510	442	6	250	29, 400	7, 007	5, 321	2, 445
New Hampshire.....	60	227	111	115	1	142	9, 468	2, 160	805	491
New Jersey.....	305	7, 715	4, 844	2, 837	34	2, 248	234, 656	38, 245	22, 289	5, 388
New York.....	772	10, 070	7, 237	2, 819	14	7, 407	244, 276	68, 456	30, 668	13, 370
North Dakota <sup>4</sup> .....	8	51	24	27	-----	40	759	240	73	149
Ohio.....	498	12, 472	6, 758	4, 409	1, 305	3, 711	251, 168	61, 243	42, 150	12, 341
Oregon <sup>5</sup> .....	11	334	235	99	-----	68	15, 059	4, 051	1, 147	840
Pennsylvania.....	550	6, 902	3, 601	3, 196	105	4, 182	76, 412	38, 169	16, 877	-----
Rhode Island.....	72	840	513	327	-----	535	27, 870	7, 046	13, 717	3, 571
South Carolina <sup>6</sup> .....	6	221	106	109	6	-----	562	562	109	321
Tennessee.....	527	10, 425	7, 364	2, 869	192	3, 314	204, 812	63, 559	46, 254	6, 323
Virginia <sup>7</sup> .....	11	744	550	187	7	102	6, 733	3, 467	2, 455	187
Washington.....	36	1, 679	905	771	3	1, 366	40, 204	9, 202	21, 137	17, 927
West Virginia.....	199	2, 954	1, 967	978	9	968	63, 666	29, 600	8, 762	2, 062
Wisconsin.....	132	1, 355	734	620	1	541	50, 434	7, 208	10, 982	9, 947

<sup>1</sup> States which did not report and those which had no clinics have been omitted from this table: they are Arizona, Delaware, Idaho, Mississippi, Montana, Nevada, New Mexico, North Carolina, Oklahoma, South Dakota, Texas, Utah, Vermont, and Wyoming.

<sup>2</sup> Includes 95,489 baths given at the U.S. Public Health Service clinic, Hot Springs National Park, Ark.

<sup>3</sup> For 6 months.

<sup>4</sup> For 8 months.

<sup>5</sup> For 11 months.

<sup>6</sup> For 3 months.

<sup>7</sup> For 2 months.

TABLE 4.—*Report of cooperative clinic activities furnished through State health departments from 1919 to 1933*

Year	Number of clinics reporting	New cases admitted	Total treatments given	Cases discharged as arrested or cured	Treatments per new case admitted
1919.....	167	59,092	527,392	14,278	8.92
1920.....	383	126,131	1,576,542	34,215	12.50
1921.....	442	140,748	2,108,003	55,467	14.98
1922.....	541	141,279	2,045,232	60,169	14.48
1923.....	513	119,217	1,992,631	55,503	16.71
1924.....	504	118,023	2,147,087	51,658	18.19
1925.....	495	110,372	2,088,494	47,828	18.92
1926.....	416	100,776	1,881,380	44,329	18.67
1927.....	425	107,688	1,964,233	44,701	18.24
1928.....	451	110,756	2,174,832	49,487	19.64
1929.....	445	120,315	2,128,417	52,136	17.69
1930.....	477	127,978	2,547,162	55,592	19.90
1931.....	512	142,915	2,833,790	57,414	19.83
1932.....	533	148,933	2,954,130	63,906	19.84
1933.....	572	149,943	3,209,073	64,697	21.40

TABLE 5.—*Report of the United States Public Health Service clinic at Hot Springs National Park, Ark., from July 1, 1932, to June 30, 1933*<sup>1</sup>

Total applicants.....	4,036	Gonorrhea (new cases).....	1,097
Venereal.....	<sup>2</sup> 2,883	Acute.....	245
Nonvenereal.....	1,153	Chronic.....	852
Syphilis.....	2,850	Total treatments given.....	168,955
New cases.....	2,124	Arsphenamines.....	14,351
Readmitted cases.....	726	Mercury and bismuth....	28,422
Gonorrhea.....	1,635	Other syphilis.....	717
New cases.....	1,097	Gonorrhea.....	29,976
Readmitted cases.....	538	Baths.....	95,489
Syphilis (new cases).....	2,124	Laboratory examinations....	59,946
Primary.....	188	Complement fixation tests.....	13,321
Secondary.....	290	Precipitation tests.....	13,316
Tertiary.....	1,525	Icterus indices.....	13,350
Neuro.....	86	Darkfields.....	429
Congenital.....	35	Gonococcus smears.....	7,901
		Urine analyses.....	11,629

<sup>1</sup> From the annual report of the clinic.<sup>2</sup> The 2,883 patients represent 4,485 cases; 1,602 patients had both syphilis and gonorrhea.

TABLE 6.—*Report of the United States Public Health Service clinic at Hot Springs National Park, Ark., from July 1, 1922, to June 30, 1933*

Year	Number of applicants	Number of cases			Treatments given <sup>1</sup>
		Total venereal diseases	Syphilis	Gonorrhea	
Total.....	51,982	43,661	27,376	16,285	760,343
1922.....	2,720	1,775	1,182	593	43,830
1923.....	3,389	1,854	1,326	528	41,559
1924.....	3,676	2,186	1,447	739	50,683
1925.....	3,411	2,782	2,011	771	50,608
1926.....	3,570	3,064	2,211	853	54,590
1927.....	4,757	3,682	2,504	1,178	58,489
1928.....	5,467	4,134	2,626	1,508	72,466
1929.....	5,265	3,986	2,512	1,474	75,519
1930.....	5,704	4,441	2,743	1,698	79,180
1931.....	4,881	5,088	2,776	2,312	66,246
1932.....	5,106	6,184	3,188	2,996	93,707
1933.....	4,036	4,485	2,850	1,635	73,466

<sup>1</sup> Baths not included.TABLE 7.—*Statistical summary of activities in the control of venereal diseases for the fiscal years 1932 and 1933*

	1933	1932 <sup>1</sup>
<b>MEDICAL ACTIVITIES</b>		
A. Cases of venereal diseases reported to State health departments:		
I. Syphilis.....	234,647	242,128
II. Gonorrhea.....	149,527	154,051
III. Chancroid.....	2,423	3,465
Total.....	386,597	399,644
B. Doses of arsphenamines distributed by State health departments.....	1,285,665	1,215,025
C. Clinics:		
I. Clinics established during the year.....	58	47
II. Clinics reporting to State health departments.....	572	533
III. Report from clinics:		
a. New cases admitted.....	149,943	150,906
b. Cases discharged as arrested or cured.....	64,697	64,645
c. Treatments given.....	3,209,073	2,979,730
d. Doses of arsphenamines administered.....	864,714	753,742
e. Wassermann (or other similar) tests made.....	540,526	521,438
f. Microscopic examinations for gonococcus.....	221,714	197,266
<b>EDUCATIONAL ACTIVITIES</b>		
A. Pamphlets:		
I. Requests for pamphlets received by the Public Health Service.....	9,323	13,112
II. Pamphlets distributed:		
a. By the Public Health Service to State health departments and others.....	85,203	121,126
b. By State health departments.....	462,986	697,252
Total.....	548,189	818,378
III. Venereal disease pamphlets issued by the Public Health Service.....	2	8
B. Lectures, exhibits and film showings reported by State health departments:		
I. Number.....	2,838	2,726
II. A average attendance.....	81	83
C. Motion picture films loaned by the Public Health Service.....	176	191

<sup>1</sup> Data for 1932 were changed from previously published figures because of corrections or the receipt of additional reports.

## DIVISION OF MENTAL HYGIENE

In charge of Asst. Surg. Gen. WALTER L. TREADWAY

The year ended June 30, 1933, marks the third full 12 months' activities of the Division of Mental Hygiene. The administrative and investigative functions of the Division continued unchanged during the year.

### NATURE AND TREATMENT OF DRUG ADDICTION

The Division has continued to receive individual reports of persons apprehended for violation of the narcotic laws. Important epidemiological data concerning drug addiction is obtained from these reports and also information for determining the potential needs respecting the treatment of this condition. Studies of the nature of drug addiction with reference to the mental and psychiatric status of those addicted have been continued at the United States penitentiary annex, Fort Leavenworth, Kans. Special studies with reference to the treatment of conditions seen when such drugs are abruptly discontinued, were inaugurated during the year. Special observations were also undertaken concerning the value of possible substitute drugs. These studies and observations were incomplete at the close of the year.

Besides the special studies being conducted at the institution mentioned, the personnel of the Public Health Service detailed there supervises and furnishes the medical and psychiatric services for the prison population.

### DISSEMINATION OF INFORMATION

Further data concerning the epidemiological factors in drug addiction was assembled for publication. Other articles were published relating to medical administrative problems with which the Division is concerned.

### STUDIES OF ABUSIVE USES AND THE MEDICINAL AND SCIENTIFIC NEEDS

Special studies for determining the annual medicinal and scientific needs of the country concerning narcotic drugs have been continued during the year. This work has been in cooperation with the Bureau of Narcotics of the Treasury Department.

### ADMINISTRATION OF NARCOTIC FARMS

Construction of the superstructure for the first United States Narcotic Farm at Lexington, Ky., was begun on March 25, 1933. Arrangements were made to lay the cornerstone with formal cere-

monies early in the next fiscal year. The institution will be completed and ready for the reception of inmates in the early part of the calendar year 1935. Estimates were prepared for the furnishings and equipment required for the efficient operation of the institution. Title to the property selected as a site for the second United States Narcotic Farm near Fort Worth, Tex., was acquired by the Government on May 26, 1933. Plans are being formulated for the development of that institution.

#### MEDICAL AND PSYCHIATRIC SERVICES IN FEDERAL PENAL AND CORRECTIONAL INSTITUTIONS

The Public Health Service continued for the third year the work of supervising and furnishing the medical and psychiatric services for Federal penal and correctional institutions under the policies originally adopted.

The medical and psychiatric services at the United States Northeastern Penitentiary, Lewisburg, Pa., were assumed by the Public Health Service on July 1, 1932, the institution being formally opened for the reception of inmates on November 12, 1932. An officer was assigned to duty as superintendent and chief medical officer for the Hospital for Defective Delinquents, Springfield, Mo., on November 15, 1932, incident to the preparation of the institution for the reception of inmates, which will take place early in the next fiscal year. It will provide facilities for the care of the criminal insane, the tuberculous, and the chronically ill and physically infirm. The Public Health Service assumed the medical services at the United States Detention Headquarters, New York City, on November 15, 1932; and at the United States Detention Farm, Milan, Mich., and the United States Southwestern Reformatory, El Reno, Okla., on April 1, 1933.

Thus, during the fiscal year ended June 30, 1933, this work expanded to include 5 additional institutions, making a total of 15 medical units brought within the scope of these activities since their inception July 1, 1930.

#### OTHER INVESTIGATIONS

Due to lack of funds and personnel, no specific field studies dealing with the causes, prevalence, and means for the prevention and treatment of nervous and mental diseases have been undertaken, except those incident to correctional procedure. They include the 5 penitentiaries at Atlanta, Ga., Leavenworth, and Fort Leavenworth, Kans., McNeil Island, Wash., and Lewisburg, Pa.; the 2 reformatories at Chillicothe, Ohio, and El Reno, Okla., respectively; the jail in New York, N.Y., New Orleans, La., El Paso, Tex., and Milan, Mich.; the women's prison at Alderson, W.Va.; the prison camps at Fort Eustis and at Petersburg, Va.; and the hospital at Springfield, Mo.



## DIVISION OF PERSONNEL AND ACCOUNTS

In charge of Asst. Surg. Gen. C. C. PIERCE

As heretofore, the Division of Personnel and Accounts has supervised all operations of the service relating to personnel, finances, and the maintenance of property records. The organization of the division has remained unchanged during the year. Through a personnel section, a finance section, and a property-record section, all matters relating to appointments, separations, and other changes in status of personnel, estimates of appropriations, allotments, and encumbrances, records of expenditures, including administrative audit, and all records of nonexpendable property are administered under the supervision of the Assistant Surgeon General in charge of the division.

The public health district directors continued to function during the year as heretofore, but no report of their activities is being included herein by reason of the necessity for conserving space.

### PERSONNEL

#### COMMISSIONED OFFICERS

On July 1, 1932, the regular crops consisted of the Surgeon General; 8 Assistant Surgeons General; 42 medical directors, 1 pharmacologist director in the grade of medical director; 29 senior surgeons, 1 senior dental surgeon, and 1 senior sanitary engineer in the grade of senior surgeon; 88 surgeons, 13 dental surgeons, and 11 sanitary engineers in the grade of surgeon; 66 passed assistant surgeons; 7 passed assistant dental surgeons, and 5 passed assistant sanitary engineers in the grade of passed assistant surgeon; 52 assistant surgeons, 18 assistant dental surgeons, 4 assistant sanitary engineers, and 10 assistant pharmacists, all in the grade of assistant surgeon. Of this number, aggregating 357, 4 medical directors, 12 senior surgeons, 8 surgeons, 2 passed assistant surgeons, and 1 assistant surgeon were on waiting orders. During the fiscal year the following changes occurred in the several grades: 17 candidates for appointment as assistant surgeon and 2 candidates as assistant dental surgeon, in the grade of assistant surgeon, and 1 assistant sanitary engineer in the grade of assistant surgeon, were successful in the entrance examination prescribed by law and regulations of the service and were commissioned in that grade; 1 senior surgeon was promoted to the grade of medical director, 4 surgeons were promoted to the grade of senior surgeon, 8 passed assistant surgeons to the grade of surgeon, 15 assistant surgeons to the grade of passed assistant surgeon, 4 passed assistant sanitary engineers to sanitary engineer in the grade of surgeon, and 1 assistant dental surgeon to the grade of passed assistant dental surgeon; 4 assistant surgeons were separated from the service and 3 assistant surgeons resigned; 2 medical directors, 1 surgeon, and 1 assistant pharmacist in the grade of assistant surgeon were placed on waiting orders because of physical disability.

On July 1, 1933, after these changes had occurred, the regular corps consisted of the Surgeon General, 8 Assistant Surgeons General, 43 medical directors, 1 pharmacologist director in the grade of medical director, 32 senior surgeons, 1 senior dental surgeon, 1 senior sanitary engineer in the grade of senior surgeon, 92 surgeons, 13 dental surgeons, and 15 sanitary engineers in the grade of surgeon; 73 passed assistant surgeons, 8 passed assistant dental surgeons, and 1 passed assistant sanitary engineer in the grade of passed assistant surgeon, 47 assistant surgeons, 20 assistant dental surgeons, 5 assistant sanitary engineers, and 10 assistant pharmacists, all in the grade of assistant surgeon—a total of 371 officers. Of this number, 6 medical directors, 12 senior surgeons, 9 surgeons, 2 passed assistant surgeons, and 1 assistant surgeon were on waiting orders.

At the close of the fiscal year 1933, 3 medical directors, 2 senior surgeons, and 3 surgeons were serving by detail as assistant surgeons general in charge of divisions of the bureau in accordance with acts approved July 1, 1902, July 9, 1918, and April 9, 1930; 5 medical directors were on duty as directors of the public health districts, 1 surgeon was serving on detail to the Bureau of Mines, Department of Commerce; 2 surgeons, 1 passed assistant surgeon, and 1 assistant surgeon were serving on detail to the United States Employees' Compensation Commission; 2 medical directors were assigned as assistants to the director, Pan American Sanitary Bureau, Washington, D.C.; 1 medical director, 1 senior surgeon, 5 surgeons, 2 passed assistant surgeons and 1 assistant pharmacist were serving on detail to the Bureau of Indian Affairs, Department of the Interior, in connection with the control of communicable diseases among the Indians; 1 surgeon was serving (as alienist and medical officer) on detail to the Morningside Hospital, near Portland, Oreg., which cares for the Alaska insane under contract with the Department of the Interior; 1 passed assistant surgeon was serving on detail with the Bureau of Standards; 1 medical director, 1 surgeon, 1 dental surgeon, 5 assistant surgeons, and 2 assistant dental surgeons were serving on detail with the United States Coast Guard; 1 senior surgeon, 4 surgeons, 4 passed assistant surgeons, 1 passed assistant dental surgeon, 5 assistant surgeons, and 1 assistant dental surgeon were assigned for duty at various penal and correctional institutions.

#### RESERVE OFFICERS

On July 1, 1932, the reserve commissioned officers on active duty numbered 29, consisting of 6 surgeons, 1 dental surgeon, 11 passed assistant surgeons, 1 passed assistant dental surgeon, 6 assistant surgeons, and 4 assistant dental surgeons.

On July 1, 1933, the number of reserve officers on active duty was 30, consisting of 5 surgeons, 1 dental surgeon, 10 passed assistant surgeons, 5 assistant surgeons, and 9 assistant dental surgeons.

#### ACTING ASSISTANT SURGEONS

On July 1, 1932, there were 732 acting assistant surgeons in the Public Health Service, and by July 1, 1933, this number had decreased to 672.

Of the 672 acting assistant surgeons, 95 were on duty at marine hospitals; 398 were engaged in immigration, relief, and maritime,

border, insular, and foreign quarantine work; 5 were engaged in the prevention of trachoma; 6 were on duty in connection with field investigations of public health and rural sanitation; 111 were on detail with the United States Coast Guard; 2 were serving with the Bureau of Mines by detail; 20 were serving at various penal and correctional institutions; 35 were engaged in anti-venereal disease activities as part-time employees at nominal compensation. Fourteen of the 35 acting assistant surgeons engaged in anti-venereal disease activities held appointments as collaborating epidemiologists.

#### ATTENDING SPECIALISTS

On July 1, 1932, there were 426 attending specialists in the service, and during the year this number increased to 454, of which number 245 were consultants to marine hospitals, while 42 were available for call at second and third class relief stations; 11 were engaged in anti-venereal disease activities; 43 were serving at various penal and correctional institutions; 113 were consultants in connection with quarantine, immigration, and scientific research activities.

#### INTERNES

On July 1, 1932, there were 99 internes in the service; on July 1, 1933, there were 93, of which number 18 were dental and 6 students. Internes are appointed for temporary periods of 1 year for duty at marine hospitals.

#### PHARMACISTS AND ADMINISTRATIVE ASSISTANTS

On July 1, 1932, there were 18 pharmacists and 31 administrative assistants in the Public Health Service. During the year 1 chief pharmacist was retired and 1 chief pharmacist died; an addition of 5 was made in the administrative assistant corps, making a total at the end of the fiscal year of 16 pharmacists, and 36 administrative assistants, as follows: 12 chief pharmacists, 4 pharmacists, 11 administrative assistants first class, 4 administrative assistants second class, 13 administrative assistants third class, and 8 administrative assistants fourth class.

#### NURSES, DIETITIANS, AND RECONSTRUCTION AIDES

On July 1, 1932, there were on duty with the Public Health Service, 558 nurses, 29 dietitians, and 38 reconstruction aides. The new hospital at Seattle, Wash., opened in January 1933, and has on duty 28 nurses, 2 dietitians, and 1 nurse acting as reconstruction aide. The infirmary at the new Federal prison at Lewisburg, Pa., has 3 nurses on duty and additional federal jails have been opened, each with 2 guard-attendants on duty. Due to the provisions of the economy act, the reduction in available funds and the withdrawal from marine hospitals of patients from the Veterans' Administration, drastic reductions in this personnel has been necessitated at all stations throughout the service. On July 1, 1933, there were on duty 449 nurses, 35 reconstruction aides, 27 dietitians, and 2 social workers. The usual contacts with nursing and public health organizations were maintained throughout the year.

## CONTRACT DENTAL SURGEONS

On July 1, 1932, there were 42 contract dental surgeons employed at marine hospitals and second, third, and fourth class relief stations. These part-time employees are appointed for local duty and receive fixed and uniform fees for dental work performed for service beneficiaries.

At the close of the fiscal year 1933, this number had increased to 47; 8 were at marine hospitals, 30 were at second, third, and fourth class relief stations, 4 were serving at various penal and correctional institutions, and 5 were detailed to the United States Coast Guard for duty.

## EPIDEMIOLOGISTS

During the year the number of assistant collaborating epidemiologists was increased from 4,606 to 4,640. These employees are health officers or employees of State, or local boards of health, who receive only nominal compensation from the Federal Government, and who furnish the service with reports of communicable diseases received by State or local health organizations. The number of collaborating epidemiologists decreased from 46 to 32; these appointees are on duty in the different States.

## NATIONAL INSTITUTE OF HEALTH

The National Institute of Health continued under the administration of Director George W. McCoy and Assistant Director R. E. Dyer. The scientific staff comprised 60 members, of whom 20 were commissioned officers, 26 other research workers, and 14 consulting experts. The staff was assisted by 17 technicians and 70 other subordinates, making a total of 147. Of this total, 131 were on full-time schedule.

## PROPERTY RECORDS

The property return section has accounted for all property of the service, and 337 property returns have been audited during the year. Sales of unserviceable property, including boats, hides, cattle, etc., aggregated \$1,647.03. Surplus property not desired by any other Government department was sold for \$219.25. Property surplus to the Public Health Service valued at \$13,194.82 was transferred to other Government departments. Surplus property of other departments valued at \$34,337.89 has been received by the Public Health Service. Property valued at \$56,275.65 has been transferred from Public Health Service stations, where it was surplus, to other service stations where it could be used.

## ACCOUNTS SECTION

The accounts section of the Division of Personnel and Accounts conducts all bookkeeping and accounting in connection with the expenditure of Public Health Service appropriations. This includes also accounts of miscellaneous collections, allotments, records of encumbrances, cost accounting, and the administrative audit. A statement of appropriations, expenditures, and balances, with miscellaneous receipts, is published as an appendix to this report.

## PERSONNEL STATEMENT

The accompanying tabular statement shows the personnel of the service as of July 1, 1933. Of the 9,952 employees shown in the table, 4,640 listed as collaborating epidemiologists and assistant collaborating epidemiologists receive only nominal compensation. They are mainly officers or employees of State and local health organizations who collaborate in the collection of morbidity statistics by furnishing the figures collected by those organizations relating to cases of communicable disease. The personnel statement also includes all part-time employees, those employed on a per diem basis, and those whose compensation is on a fee basis. The decrease of 892 employees was caused mainly by a necessary reduction on June 30, 1933, because of a lack of funds for payment of their salaries during the fiscal year 1934.



Consolidated quarterly personnel report for the quarter ended July 1, 1933

Administrative division and station or activity	Medical and scientific													
	Regular corps							Reserve corps					Acting assistant surgeon	Attending specialist and consultant
	Surgeon general	Medical director	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Medical director	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Contract dental surgeon	Interne
Bureau	1		3											
Hospital division:														
Marine hospitals:														
Baltimore, Md.		1			3	1	1						5	24
Boston, Mass.		1			1	2	2						4	12
Buffalo, N. Y.					1	1							3	9
Carville, La.					1									1
Chicago, Ill.		1			2		1						4	4
Cleveland, Ohio		1			2		3						4	12
Detroit, Mich.					2	1							5	8
Ellis Island, N. Y.		1			1	3	1				1		4	14
Evansville, Ind.					1								13	6
Fort Stanton, N. Mex.					1		3						2	7
Galveston, Tex.					1	2	1						4	2
Hudson Street, N. Y.					4		5			1	1	1	3	12
Key West, Fla.					1		2						9	17
Louisville, Ky.		1											1	1
Memphis, Tenn.					1								2	8
Mobile, Ala.					1	2				1			3	5
New Orleans, La.					4	4	7				1		10	3
Norfolk, Va.					2	1	3				1	1	4	7
Pittsburgh, Pa.					1		1						4	7
Portland, Maine				1			1				1	1	1	12
Port Townsend, Wash.					1								2	17
St. Louis, Mo.					1	1							4	17
San Francisco, Calif.		1			5	3	8			1	1	1	4	17
Savannah, Ga.		1				1				2			6	8
Seattle, Wash.				1	1	4	3				1	2	1	12

Administrative division and station or activity	Medical and scientific															
	Regular corps						Reserve corps					Acting assistant surgeon	Attending specialist and consultant	Contract dental surgeon	Interne	Pharmacist
	Surgeon general	Medical director	Assistant surgeon general	Senior surgeon	Surgeon	Passed assistant surgeon	Assistant surgeon	Medical director	Senior surgeon	Surgeon	Passed assistant surgeon					
FIELD—continued																
Hospital division—Continued.																
Marine hospitals—Continued.																
Stapleton, Staten Island, N.Y.		1			2	5	4						2	4	9	
Vineyard Haven, Mass.						1							1	1	1	
Total hospitals.....																
Relief stations:																
Second class.....		1		2	3	2	6					1	15	33	8	
Third class.....													131	9	22	
Total relief stations.....																
Foreign quarantine division:																
Quarantine stations—																
Baltimore, Md.				1									1			
Boston, Mass.				1									3			
Ellis Island (also immigration)		3		1	3								16			
El Paso, Tex.													3			
Fort Monroe, Va.		2				1										
Galveston, Tex.				1									1			
Honolulu, T.H.					1	2							7			
Laredo, Tex.													6			
Marcus Hook, Pa.		1														
New Orleans, La.					1		2									
Rosebank, N.Y.		1		1		2							3	1		
San Francisco, Calif. (also immigration)		1											3			
San Juan, Puerto Rico.					1								2			

Foreign ports.....		2		1	1	11	1						33	2			
All other stations.....		2		3	8	4							168				2
Total quarantine and immigration.....																	
Domestic quarantine division:																	
Interstate.....					6		3										
Trachoma.....					1								5	5			
Rural sanitation (regular).....					2	1							2	1			
Rural sanitation (drought).....																	
All other stations.....		1			2	1											
Total, all activities.....																	
Scientific research division:																	
National Institute of Health.....		4		2	8	5	2							5			1
Leprosy investigations.....					1	2											
Malaria investigations.....				1	3	1											
Nutrition studies.....					1	1								1			
Stream pollution.....					3		1							4			
Industrial hygiene and sanitation.....					1	3	2							34			
Child hygiene.....					1		2							7			
Statistical office.....														9			
All other stations.....		1		1	4	2							2	37			
Total, all activities.....																	
Sanitary reports and statistics.....													1				
Division of venereal diseases.....					1								35	11			
Division of mental hygiene:																	
Alderson, W. Va.....													5	2			
Atlanta, Ga.....						1	1					1	2	5		2	
Chillicothe, Ohio.....						1						1	1	4		2	
Fort Leavenworth, Kans.....					1	2							1	2		3	
Leavenworth, Kans.....						1	1					1	2	4		3	
Petersburg, W. Va.....													2	4	1		
McNeil Island, Wash.....					1				1			1	1	4		1	
All other stations.....				1	2		4					1	6	22	3	3	
Total, all activities.....																	
Miscellaneous:																	
Detailed to other offices.....		3		1	8	4	1						2				
Coast Guard.....		1			2		7			4			111	4	4		
Perry Point, Md. (supply station).....							1										
Public health districts.....		5					2										
Waiting orders.....		6		12	9	2	2										
All others.....		1		3	5	1							1	3	1		
Total miscellaneous.....																	
Grand total.....		1	44	8	34	120	82	82	6	10	14	672	454	47	93	16	

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PUBLIC HEALTH SERVICE

Administrative division and station or activity	General and technical													Totals				
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific—National Institute	Administrative assistant	Druggist	Nurse	Aide (P.T. and O.T.)	Dietitian	Laboratorian in roentgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other field employees	Departmental personnel	Medical and scientific	General and technical	Sub	Grand
Bureau														195	9	195		204
FIELD																		
Hospital division:																		
Marine hospitals:																		
Baltimore, Md.			1	1	25	3	2		1			6	70		42	109	151	
Boston, Mass.			1	1	17	1	1		1			7	61		25	90	115	
Buffalo, N.Y.					7	1	1		1			4	15		18	29	47	
Carville, La.			1	1	1							6	194		10	203	213	
Chicago, Ill.					19	1	2					9	58		27	90	117	
Cleveland, Ohio.			2		9							4	44		19	59	78	
Detroit, Mich.					12		1					4	36		24	53	77	
Ellis Island, N.Y.			2	1	56	2	4		1			9	182		29	257	286	
Evansville, Ind.					5							2	16		12	23	35	
Fort Stanton, N.Mex.			1		10	3	2					9	111		11	136	147	
Galveston, Tex.			1	1	13	1	1		1			4	42		22	63	85	
Hudson Street, N.Y.				1	6	6		1	1			9	40		41	64	105	
Key West, Fla.					5							3	10		6	18	24	
Louisville, Ky.					5							2	18		15	25	40	
Memphis, Tenn.				1	6							3	21		13	31	44	
Mobile, Ala.			1	1	12	1						4	40		12	59	71	
New Orleans, La.			1	1	44	4	4		1			19	137		49	211	260	
Norfolk, Va.				1	26	1	2	1	1			8	84		28	124	152	
Pittsburgh, Pa.				1	7							3	15		16	26	42	
Portland, Maine.			1		5							2	19		17	27	44	
Port Townsend, Wash.																		
St. Louis, Mo.					9		1	1				4	26		22	41	63	
San Francisco, Calif.			1		47	3	2	1	1			11	136		51	202	253	
Savannah, Ga.			1	1	12	1	1					4	35		18	55	73	
Seattle, Wash.			2	1	28	1	2					7	80		26	121	147	

Stapleton, Staten Island, N.Y.			2	1	34	3	3				8	114		29	165	194	
Vineyard Haven, Mass.					2						1	7		4	10	14	
Total hospitals.														586	2,291		2,877
Relief stations:																	
Second class.			1		3	1		1			14	16		71	36	107	
Third class.											7			162	7	169	
Total relief stations.														233	43		276
Foreign quarantine division:																	
Quarantine stations:																	
Baltimore, Md.			1						1	1		14		2	17	19	
Boston, Mass.			1		1				2	2	1	19		4	26	30	
Ellis Island (also immigration)											2	9		23	11	34	
El Paso, Tex.											1	11		3	12	15	
Fort Monroe, Va.									2	2	1	15		3	20	23	
Galveston, Tex.									1	3		9		2	13	15	
Honolulu, T. H.									2		1	21		10	24	34	
Laredo, Tex.												13		6	13	19	
Marcus Hook, Pa.			1		2				2	2	1	21		1	29	30	
New Orleans, La.									3	3	1	18		6	25	31	
Rosebank, N. Y.			3		1				6	6	7	91		12	114	126	
San Francisco, Calif. (also immigration)					1				4	2	2	43		5	52	57	
San Juan, Puerto Rico											2	21		3	23	26	
Foreign ports.											4	23		51	27	78	
All other stations.			1	1	2				15	15	12	201		187	247	434	
Total quarantine and immigration.														318	653		971
Domestic quarantine division:																	
Interstate.											6	44		9	50	59	
Trachoma.					6									11	7	18	
Rural sanitation (regular)					6						9	7		6	22	28	
Rural sanitation (drought)																	
All other stations.											1	21		4	22	26	
Total, all activities.														30	101		131
Scientific research division:																	
National Institute of Health.		33									12	76		27	121	148	
Leprosy investigations.											1	4		3	5	8	
Malaria investigations.											3	9		5	12	17	
Nutrition studies.												2		3	2	5	
Stream pollution.											2	14		8	16	24	
Industrial hygiene and sanitation.											6	12		40	18	58	
Child hygiene.						1					6	1		8	8	16	
Statistical office.					1						8	3		9	12	21	
All other stations.			1					2			12	51		47	66	113	
Total, all activities.														150	260		410



*Consolidated quarterly personnel report for the quarter ended July 1, 1933—Continued*

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PUBLIC HEALTH SERVICE

Administrative division and station or activity	General and technical														Totals			
	Assistant collaborating epidemiologist and collaborating epidemiologist	Scientific—National Institute	Administrative assistant	Druggist	Nurse	Aide (P.T. and O.T.)	Dietitian	Laboratorian in roentgenology	Laboratorian in bacteriology	Pilot	Marine engineer	Clerk	All other field employees	Departmental personnel	Medical and scientific	General and technical	Sub	Grand
FIELD—continued																		
Sanitary reports and statistics	4,640												1		1	4,641		4,642
Division of venereal diseases									1			4	12		47	17		64
Division of mental hygiene:																		
Alderson, W.Va.					5							1			7	6	13	
Atlanta, Ga.			1		3								1		12	5	17	
Chillicothe, Ohio			1		3								3		9	7	16	
Fort Leavenworth, Kans.			1		3										7	4	11	
Leavenworth, Kans.			1	1	3										12	8	20	
Petersburg, W.Va.					1								3		5	2	7	
McNeil Island, Wash.					2								1		9	2	11	
All other stations			2		3								10		42	15	57	
Total, all activities															103	49		152
Miscellaneous:																		
Detailed to other offices															19	0	19	
Coast Guard					2										133	2	135	
Perry Point, Md. (supply station)												4	4		1	8	9	
Public health districts			2									7			7	9	16	
Waiting orders															31	0	31	
All others															15	0	15	
Total miscellaneous															206	19		225
Grand total	4,640	33	36	16	470	34	29	4	12	38	36	291	2,435	195	1,683	8,269		9,952

## CHIEF CLERK'S OFFICE

### NEW ADMINISTRATION BUILDING AT WASHINGTON

An event of special interest in the history of the Public Health Service occurred in May 1933, when the administrative offices were moved to the newly completed Public Health Service administration building at Nineteenth Street and Constitution Avenue. Actual transfer of the offices from Temporary Building C on Seventh Street SW. began on May 11 and was completed on May 16.

This splendid marble structure was authorized by Congress in the act of July 3, 1930, which appropriated \$865,000 for its construction. This authorization was subsequently increased by 5 percent, and the actual cost proved to be approximately \$908,250, exclusive of the cost of the site. Ground was broken for the foundation on July 21, 1931, and erection of the superstructure began early in December of that year. On May 7, 1932, the cornerstone was laid with appropriate ceremony by the Hon. Ogden L. Mills, Secretary of the Treasury, in the presence of a large gathering of officials and the public. In a sealed copper box within the cornerstone were placed copies of books of Public Health Service regulations, annual reports, current health publications, and other data pertaining to the Public Health Service from its inception to the present time.

The building contains 1,505,940 cubic feet, with a gross floor area of 79,931 square feet and net office space of 59,081 square feet. The frontage on Constitution Avenue is 261 feet, while the wings have a present depth of 141 feet. The design of the building contemplates its possible extension to the north, for which space is available on the present site.

The building was planned with a special view to facilitating administrative work and promoting the health and efficiency of the headquarters force. In its occupancy, the hopes of many years have been realized, and it is observable that the working personnel is showing increased efficiency as a result.

### DEPARTMENTAL PERSONNEL

During the fiscal year 2 telephone operators were released and the positions abolished because of the installation of the dial system, 1 employee resigned, 2 were retired for physical disability, and 1 was separated from the service. These latter vacancies were not filled because of the limitations placed upon expenditures for the fiscal year 1934. For the same reason further curtailments were necessary, and early in July 1933, 12 additional employees were separated from the service under the provisions of the Economy Act. This reduction of 18 positions decreased the total force on duty in the Bureau to 183, of which number, 164 are paid from the appropriation "Salaries, office of the Surgeon General", 10 from the appropriation for the division of venereal diseases, and 9 from the appropriation for the division of mental hygiene.

The average sick leave was 7.8 days per employee, a small decrease from the preceding year. Punctuality on the part of the force was virtually perfect, there having been less than one case of tardiness per employee for the year. No administrative promotions were made.

Mr. Arthur M. Wheeler, chief of the accounts section, died on December 10, 1932. He had been in this service since May 6, 1899. Mrs. Honora Gable, an employee since May 1, 1919, died December 28, 1932. Miss Ella C. Brehaut, chief of the voucher audit unit, retired voluntarily on September 1, 1932, after reaching the age prescribed by law. She had served for 39 years.

#### PRINTING AND BINDING

The available fund for printing was reduced from \$93,000 to \$50,000 for the year. The Public Health Reports, a weekly publication, was necessarily reduced to half its former size and reports of research and health publications generally were curtailed more than 50 percent. As a corresponding cut could not be made in the printing of blank forms, record books, and letterheads, essential to official operations, most of the saving had to be absorbed in publications and binding.

#### PUBLIC HEALTH SERVICE LIBRARY

Additions to the library consisted of 420 bound volumes and 250 pamphlets, making a present total of 13,192 books and 7,050 pamphlets.

Medical and scientific journals to the number of 226 were received and circulated; only 36 represented paid subscriptions, the others having been received gratuitously or by exchange. A number of periodical health bulletins issued by State, city, and foreign governments suspended publication, thus decreasing the total number received by our library. The demands upon the library continue to grow, and the small available staff is at times not equal to the needs of the work. However, the splendid library quarters in the new building, affording improved facilities, compensate somewhat in this respect.

# APPENDIX

## FINANCIAL STATEMENT

The following is a statement of expenditures from appropriations of the Public Health Service for the fiscal year 1933:

Appropriation	Appropriated	Obligations			Unobligated balance
		Incurred	Liquidated	Outstanding	
Salaries, Office of Surgeon General....	\$340,000.00	\$298,820.11	\$298,820.11	-----	\$41,179.89
Pay, etc., commissioned officers and pharmacists.....	1,730,000.00	1,482,064.12	1,478,156.78	\$3,907.34	247,935.88
Pay of acting assistant surgeons.....	389,984.00	318,125.74	317,181.45	944.29	71,858.26
Pay of other employees.....	1,100,000.00	897,450.79	896,941.72	509.07	202,549.21
Freight, transportation, etc.....	38,000.00	35,204.76	27,547.11	7,657.65	2,795.24
Maintenance, National Institute of Health.....	48,000.00	41,945.77	40,851.02	1,094.75	6,054.23
Books.....	500.00	487.80	478.46	9.34	12.20
Pay of personnel and maintenance of hospitals.....	1 6,786,570.50	6,173,206.09	6,165,399.08	7,807.01	613,364.41
Quarantine service.....	420,000.00	331,902.26	312,134.86	19,767.40	88,097.74
Preventing the spread of epidemic diseases.....	350,000.00	271,900.95	266,356.12	5,544.83	78,099.05
Field investigations of public health.....	400,000.00	359,848.60	356,002.64	3,845.96	40,151.40
Interstate quarantine service.....	39,214.00	29,825.14	29,315.32	509.82	9,388.86
Studies of rural sanitation.....	300,000.00	252,149.44	250,910.48	1,238.96	47,850.56
Control of biologic products.....	46,000.00	40,098.35	38,909.50	1,188.85	5,901.65
Expenses, Division of Venereal Diseases.....	90,000.00	78,638.96	77,730.07	908.89	11,361.04
Expenses, Division of Mental Hygiene.....	48,215.00	42,048.24	41,949.94	98.30	6,166.76
Educational exhibits.....	1,500.00	1,414.34	1,302.21	112.13	85.66
Total.....	\$ 12,127,983.50	10,655,131.46	10,599,986.87	55,144.59	1,472,852.04

<sup>1</sup> Includes \$1,106,570.50 reimbursement for care and treatment of beneficiaries of the Veterans' Administration.

<sup>2</sup> Statement does not include expenditure of \$4,812.42 from trust fund "National Institute of Health, Conditional Gift Fund."

*Quarantine service—Expenditures by stations*

Name of station	Pay of officers and employees	Operation Expenses	Total
CONTINENTAL QUARANTINE STATIONS			
Baltimore, Md.	\$28,325.21	\$17,401.11	\$45,726.32
Beaufort, S.C.	577.50		577.50
Biscayne Bay (Miami), Fla.	16,529.93	10,470.25	27,000.18
Boca Grande, Fla.	2,087.50	162.89	2,250.39
Boston, Mass.	41,254.09	19,128.74	60,382.83
Brownsville, Tex.	16,035.71	3,006.22	19,041.93
Brunswick, Ga.	3,703.73	1,046.72	4,750.45
Cape Fear (Southport), N.C.	8,501.75	2,585.38	11,087.13
Charleston, S.C.	17,859.37	3,800.03	21,659.40
Columbia River (Astoria), Oreg.	5,072.31	1,567.93	6,640.24
Corpus Christi, Tex.	1,800.58	56.73	1,857.31
Cumberland Sound (Fernandina), Fla.	1,984.40	2.63	1,987.03
Delaware Breakwater (Lewes), Del.		25.00	25.00
Del Rio, Tex.	5,286.26	1,059.55	6,345.81
Eagle Pass, Tex.	13,830.20	1,037.00	14,867.20
El Paso, Tex.	25,722.29	4,961.70	30,683.99
Eureka, Calif.	1,404.44	12.00	1,416.44
Freeport, Tex.	364.23		364.23
Galveston, Tex.	26,558.27	11,281.27	37,839.54
Gulfport, Miss.	5,297.59	695.78	5,993.37
Hidalgo, Tex.	6,364.27	845.25	7,209.52
Key West, Fla.	3,624.66	346.35	3,971.01
Laredo, Tex.	25,904.24	2,420.90	28,325.14
Marcus Hook, Pa.	52,521.25	33,790.70	86,311.95
Mercedes, Tex.	2,552.15	729.48	3,281.63
Mobile, Ala.	24,942.31	8,117.40	33,059.71
New Bedford, Mass.	577.50	10.00	587.50
New Orleans, La.	51,708.14	13,456.34	65,164.48
Newport, R.I.		10.00	10.00
New York, N.Y.	200,735.77	84,317.49	285,053.26
Nogales, Ariz.	10,226.67	1,618.98	11,845.65
Norfolk (Fortress Monroe), Va.	33,373.17	7,331.65	40,704.82
Olympia, Wash.	288.75		288.75
Pascagoula, Miss.	1,079.94		1,079.94
Pensacola, Fla.	14,993.18	1,599.53	16,592.71
Perth Amboy, N.J.	1,439.76	1,200.00	2,639.76
Port Arthur, Tex.	8,162.62	113.72	8,276.34
Portland, Maine.	14,205.54	4,716.34	18,921.88
Portland, Oreg.	3,356.10	1,494.00	4,850.10
Port Townsend, Wash.	12,868.58	3,404.39	16,272.97
Presidio, Tex.	4,211.01	341.95	4,552.96
Providence, R.I.	1,673.94	525.00	2,198.94
Rio Grande, Tex.	4,198.35	170.60	4,368.95
Roma, Tex.	4,424.34	680.69	5,105.03
Sabine, Tex.	12,703.16	1,090.32	13,793.48
St. Andrews (Panama City), Fla.	1,081.92	145.81	1,227.73
St. Georges Sound (Carrabelle), Fla.	288.72		288.72
St. Johns River (Jacksonville), Fla.	7,233.02	1,409.58	8,642.60
San Diego (Point Loma), Calif.	13,827.02	5,127.13	18,954.15
San Francisco (Angel Island), Calif.	63,438.24	19,536.17	82,974.41
San Pedro (Los Angeles), Calif.	31,883.56	5,455.95	37,339.51
Savannah, Ga.	16,586.68	4,540.87	21,127.55
Seattle, Wash.	11,123.01	2,622.81	13,745.82
Tampa, Fla.	13,103.73	6,275.58	19,379.31
Vineyard Haven, Mass.		10.00	10.00
Ysleta, Tex.		18.45	18.45
Zapata, Tex.	2,105.88	362.00	2,467.88
Freight and miscellaneous		20,132.00	20,132.00
Travel of medical directors within districts		282.35	282.35
Total, continental quarantine stations	879,002.54	312,550.71	1,191,553.25
INSULAR QUARANTINE STATIONS			
Hawaii	36,067.87	8,749.31	44,817.18
Puerto Rico	33,463.86	8,067.24	41,531.10
Virgin Islands	11,208.18	2,535.00	13,743.18
Total, insular quarantine stations	80,739.91	19,351.55	100,091.46
Total, all stations	959,742.45	331,902.26	1,291,644.71



*Savings—Funds impounded under the economy acts*

Appropriation	Furlough and compensation deductions	Vacancy savings
Salaries, Office of Surgeon General	\$34,590.40	\$4,733.89
Pay, etc., commissioned officers and pharmacists	131,185.97	2,682.90
Pay of acting assistant surgeons	36,632.29	5,899.83
Pay of other employees	114,192.16	57,353.65
Freight, transportation, etc.	204.42	
Maintenance, National Institute of Health		
Books		
Pay of personnel and maintenance of hospitals	488,766.62	97,282.14
Quarantine service		
Preventing the spread of epidemic diseases	21,866.05	5,513.84
Field investigations of public health	28,865.02	3,452.33
Interstate quarantine service	987.47	
Studies of rural sanitation	14,481.04	480.00
Control of biologic products	2,279.24	
Expenses, Division of Venereal Diseases	7,776.85	670.55
Expenses, Division of Mental Hygiene	4,364.76	1,064.48
Educational exhibits	61.27	
Total, Public Health Service appropriations	886,253.56	179,133.61
Medical and hospital service, penal institutions	20,456.09	2,671.03
Mosquito control	270.99	
Total funds by transfer	20,727.08	2,671.03
Grand total	906,980.64	181,804.64

## FUNDS TRANSFERRED FROM OTHER DEPARTMENTS

Expenditures from allotments of funds from other Bureaus and Offices for direct expenditure during the fiscal year 1933 were as follows:

Appropriation title	Allotted	Expended
Veterans' Administration: Salaries and expenses	\$1,124,294.20	\$1,124,294.20
District of Columbia: Mosquito control in District of Columbia	5,600.00	3,195.95
Department of Justice: Medical and hospital service, penal institutions	340,560.00	297,589.73
Total	1,470,454.20	1,425,079.88

## MISCELLANEOUS RECEIPTS—COVERED INTO THE TREASURY

The revenue derived from operations of the Public Health Service during the fiscal year 1933 are as follows:

Source	Amount
GENERAL FUND RECEIPTS	
Quarantine charges	\$211,759.63
Hospitalization charges and expenses	19,537.99
Sale of subsistence	12,057.73
Laundry service	33.00
Sale of occupational therapy products	334.21
Sale of obsolete, condemned, and unserviceable equipment	1,479.30
Rents	1,933.00
Reimbursement for Government property lost or damaged	477.39
Commissions on telephone pay stations installed in service buildings	1,475.91
Sale of refuse, garbage, and other byproducts	904.49
Sale of livestock and livestock products	397.73
Other revenues	618.22
Total, general fund receipts	251,008.60
TRUST FUND RECEIPTS	
Effects of deceased patients	1,777.62
Grand total	252,786.22



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